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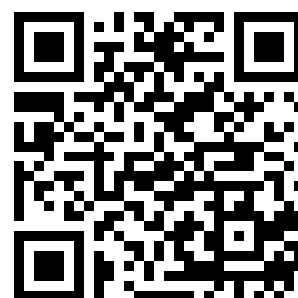
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Graphite







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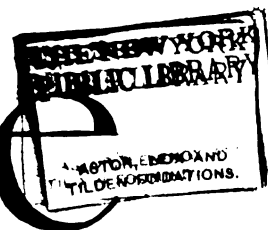
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# Graphite



VOL. V.

DECEMBER 1902.

No. 1.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

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## GRAPHITE BRUSHES FOR COMMUTATORS.

According to "*The Practical Engineer*," by far the predominating brush of the present time, and the one which is most rapidly growing in favor with electrical men, is the carbon or graphite brush. It is of greater cross-section than the copper brush required to carry an equal amount of current, because its conductivity is not so great, and heating of the brush and holder would be the inevitable result were it made of the same size as the copper brush.

The carbon or graphite brush possesses another distinct advantage besides its cost. The wear of carbon or graphite on copper is much less than the wear of copper on copper. It is not common nowadays to find an all-copper brush in use unless it is in very old in-

stallations. The present form of the copper brush is an altered one. Instead of several strips of sheet copper, we now have a brush built up of thin strips of copper alternating with layers of copper wire. Still another efficient and much used brush is composed of fine copper wire woven into shape. All of these forms of purely copper brush, however, are productive of friction and wear, and should be used on machines of low voltage.

With the graphite brush, the particles of graphite which wear from the brush will act as a lubricant for the surface of the commutator. The brush then becomes self-lubricating, so to speak, and makes unnecessary the use of the oldtime commutator dressing.

Carbon or graphite brushes are effective in reducing excessive sparking because of their greater resistance to the passage of current.

As between carbon and graphite, there is quite a distinction, although graphite is one of the forms of carbon, while carbon brushes are not necessarily graphite brushes. The graphite brush is a smoother brush than the carbon brush, will last longer, and altogether is very largely preferred; especially graphite brushes made of wholly refined graphite, such as is employed in the manufacture of Dixon's Graphite Commutator Brushes.

WHEN it comes to output the pencil manufacturer takes the lead.

## WORDS O'CHEER.

Lo! Calvin, Knox and Luther cry  
I hae the truth and I and I.  
Puir sinners, if ye gang agley  
The Deil will hae ye  
And then the Lord will stand abeigh  
And will nae save ye.

But hoolie, hoolie; Na sa fast.  
When Gabriel shall blaw his blast  
And Heaven and earth awa hae past,  
These lang syne saints  
Shall find baith Deil and Hell at last  
Mere pious feints.

The upright, honest-hearted man,  
Who strives to do the best he can,  
Need never fear the Church's ban  
Or Hell's damnation,  
For God will need nae special plan  
For his salvation.

The ane wha feels our deepest needs,  
Reeks little how man counts his beads,  
For righteousness is not in creeds  
Or solemn faces,  
But rather lies in kindly deeds  
And Christian graces.

Then never fear, wi' purpose leal,  
A head to think, a heart to feel  
For human woe, or human weal,  
Nae preaching loon  
Your sacred birthright e'er can steal  
To Heaven aboon.

Tak tent o' truth and head thee well,  
The man who sins mak's his own hell,  
There nae worse deil than himsel,  
But God is strongest,  
And when puir human hearts rebel  
He haulds out longest.

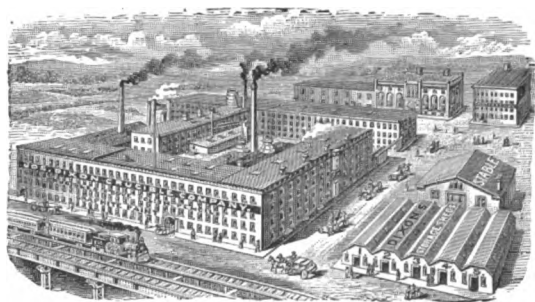
The above verses were sent from Scotland to Mr. J. B. Forgan, president of the First National Bank of Chicago, by one of his Scotch friends, and it is vouched for as being authentic—an unpublished poem of Robert Burns.

Of all sad words of wisdom or wit,  
These are the saddest: "Please remit."



ESTABLISHED 1827.

INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

### SALESROOMS AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Horgen (Switzerland), Finland.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
*President. Vice Pres. and Treas. Secretary.*

JERSEY CITY, N. J., December 1902.

### DIXON AND CHRISTMAS.

With Christmas come thoughts of good cheer, happy reviews, a lawful sense of work well done, and the enjoyment of the reward.

The Dixon Company does not close the year 1902 puffed up with undue pride, and is in no mood of self-exaltation, but it is fair to say that we have earned the right to take a Christmas breath and fill our lungs with the air of a reasonable congratulation.

Every man of us has done a year's good work. True, it has been bounded by mental limits, so that all have not done equally well; like the stars, one has exceeded another in glory. But nevertheless, admitting this, the maximum has been well done.

We are a congenial band of workers, and so much so that we will be exceedingly particular now who we will add to our numbers, for not every one is worthy of a place on the Dixon roster. Tests of mental grip, of tact, of knowledge of the work to be done, traits of character, will be examined closer than ever before. We Dixon folk are proud of our industry and fancy we are in the best business in the world. Every article we make contributes to somebody's well-being, to social and civil uplifting. It is an industry a patriot, a philanthropist might applaud. We touch learning, mechanics and progress on every side. We are proud of our graphite citizenship.

But while all this is obvious and while the past shows with satisfactory review, we have but touched the hem of the garment of the possible. The great future holds for us, if our knowledge is profound enough, if our grip is strong

enough, successes of which the past are only the hints. Brooks Adams says, "the manufacturer who is least bound by tradition is the one who, other things being equal, will lead."

In pencil making we hope the end is not yet, and that the future will seriously improve the past. Crucibles must come that never fail, that take and keep the record. The function of graphite to reduce friction is hardly yet in its infancy, it is just born. The world hardly knows as yet what graphite can do for a paint pigment—its unrivaled qualities make it dominate. Graphite has a role to cut in the electrical world and success yet to score in the annals of American progress; we say American, because the birth-place of the use of graphite is America, in America is the only flake graphite found, Americans first adapted it, Americans first used it, and these Christmas times Americans—emphatically and exclusively the Dixon Company—can say, "We discovered graphite, we adapted it, we made its virtues known, we are up to date its sponsors, its fathers!"

To brace up for further successes is no idle task, for this knowledge must increase, experiments must multiply, our studies must be profound, and our disposition must be energy itself.

To do this is the work of the people inside the walls of the factory and the office, and to our representatives in the field falls the work of making our wares known.

The time has arrived to prepare for a greater task, to achieve a more radical progress; mistakes must cease, improvements must come, difficulties must be welcomed.

The world was born in the East, the finger of the East has always pointed to the West, and the East has said:—"There in the West shall the great success be!" We are this West. We live in its midst, on us is its mantle, and no one of us should experience self-satisfaction or feel that he can please God who does not do some one thing pre-eminently well that helps human welfare! —J. A. W.

### FORCE FEED LUBRICATION.

**Which Brings Out the Great Advantages of Flake Graphite as a Lubricant, and Makes Unnecessary the Attempt to Suspend Graphite in Oil.**

The rapid increase in the use of the positive force feed type of steam engine lubricators, has been immediately followed by the increased use of graphite as a lubricant for steam engine cylinders. The one thing which has stood in the way of the universal use of graphite for this purpose is its natural tendency to settle and so clog up the narrow oil passages. Graphite has a specific gravity of about 2.2, or about two and a half times that of mineral lubricating oils, and under ordinary conditions settling is inevitable, thus rendering the use of mixtures of oil and graphite in the usual type of sight feed lubricators both difficult and uncertain. Many schemes have been tried with the object of keeping graphite suspended in oils, with varying degrees of success, but in these days of positive feeds such schemes of doubtful utility are not at all necessary.

But it may be of interest to consider this matter of settling, together with the schemes for its prevention, somewhat in detail. In the first place, a liquid is properly defined as a substance in which the molecules are displaced

by the exertion of the slightest amount of force. In the case of a mixture of oil and graphite, each particle of the latter tends to sink by a force equal to about two-thirds of its own weight in air, and so long as the oil is in the liquid condition the result of this force is shown by the settling of the graphite. In the case of high viscosity oils, this settling occurs slowly, in some cases so slowly as to lead an casual observer to think there is no settling at all. But it must be remembered that the viscosity of oils vary with their temperature: thus, cylinder oils become practically solid at temperatures between forty and sixty degrees F, and are limpid at 200 degrees. At forty degrees there is no settling at all; at seventy-five it proceeds slowly, while at two hundred degrees it is relatively rapid. The temperature which the oil attains in the sight feed lubricator may be anywhere from 100 to 150 degrees, and no attempt to suspend graphite in oil may be considered as successful unless suspension is maintained at these higher temperatures. All schemes, with this result in view, consist primarily in surrounding the particles of graphite with a coating of grease, wax or oil, which will not mix or dissolve in the suspending oil. Let us imagine a particle of graphite, specific gravity 2.2, to be surrounded by a coating, the volume of which is twenty times that of the graphite particle, and having a specific gravity of .9. The specific gravity, then, of this compound particle will be .96 and its tendency to settle will be very much less than that of the graphite alone. When greases or waxes are used to form this coating, the graphite is first mixed thoroughly with this coating material and then it is ground with the suspending oil at a temperature below its melting point. This treatment reduces the mixture of coating substance and graphite to the form of small, thin flakes, evenly distributed throughout the suspending oil. Where the volume of the coating material to that of the graphite is relatively large, as in the case given above, and where the suspending oil is very viscous, all tendency to settle is practically done away with. Such a mixture will retain its original condition until it reaches a temperature at which the grease or wax melts, when of course the structure collapses and either settles or is dissolved.

A lubricating compound which is largely used at the present time consists of a mixture of mineral oil mixed with horse-grease saponified with lime. This compound is made in different consistencies by varying the relative proportions of the two ingredients. The softer of these compounds may be considered as globules of saponified fat holding mineral oil in solution up to the point of saturation, precisely in the same manner as a sponge holds water. The slightest pressure tends to squeeze out some of the oil, so that each globule is surrounded by a film of it. These softer compounds may well be compared to a mass of the pulp of grapes, the graphite particles being paralleled by the seeds inside the grape. They are much more fluid than cylinder oils at ordinary temperatures, and are not much changed by heat until a temperature of 140 degrees is reached.

When oils are used as the coating material, the problem presents new features. Both the coating and suspending oils being fluid at ordinary temperatures, it is necessary

that they be not miscible with each other, otherwise the coating film will be absorbed by the suspending oil, and the graphite particle will sink as if it had not been coated at all.

Because the coating is fluid, the graphite particle cannot be coated with such a relatively large volume as when a grease is used, and therefore the specific gravity of the compound particle cannot be brought so low.

Castor oil and, to a certain extent, blown rape oil, are not miscible in mineral oils, and will remain as a coating on graphite when mixed with such oils. If these oils were lighter than the mineral oils we could probably, by using particles of graphite of extremely minute size, make such a combination that these coated particles would remain in a state of practical suspension. Unfortunately all vegetable and animal oils are heavier than the mineral oils, and because of their own gravity, settle out of such mixtures.

We might well change the point of view and say that a particle of graphite enclosed in a globule of oil makes the latter heavier and therefore sink more rapidly. It has been claimed that the resistance to movement between the globule of oil and the suspending oil is so great as to prevent settling. The falsity of this proposition is shown by the most casual consideration. If there is any adherence at all between the globule and the surrounding oil, the immediately surrounding molecules of the latter move downward with the globules, and the rate of movement would be that due to the viscosity of the surrounding oil.

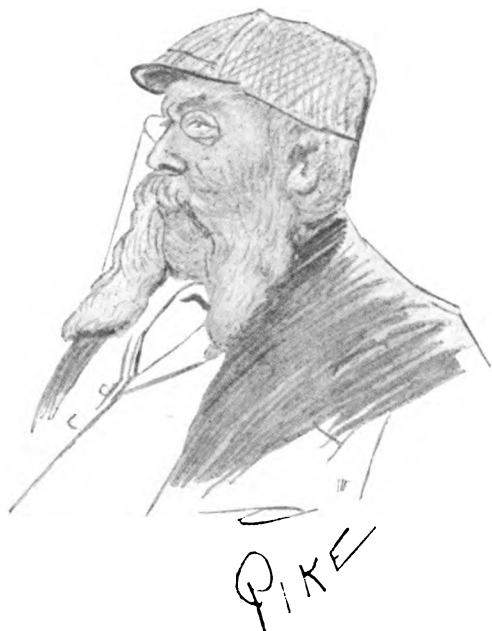
If we will agitate some castor oil with a filtered cylinder oil, and keep at a temperature above the solidifying point of the cylinder oil, we will find the castor oil to settle at the bottom perfectly clear, only somewhat colored by contact with the cylinder oil. This indicates that the globules of castor oil force their way downward through the mineral oil with practically no adherence between the oils. It is evident that this settling will be more rapid when these globules enclose a particle having a specific gravity  $2\frac{1}{2}$  times greater; and, furthermore, that if it occurs at ordinary temperatures, it will occur more rapidly at much higher temperatures. Objection might also be urged against the advisability of putting an oil like castor oil into steam engine cylinders, the present tendency being all in the way of using straight mineral oils for this purpose. But as was said before, in these days of force feeds, such schemes of doubtful utility are not needed. The present day devices, both automatic and intermittent, afford an absolutely reliable and easily-regulated method of getting mixtures of oils and graphite into engine cylinders. For many years the hand oil pump had been used for this purpose and with the most excellent results. The objection urged against it is that it is not automatic or continuous, and is one more thing requiring the engineer's attention, but the most excellent results obtained by the use of graphite, applied even in this intermittent manner, show its high value in steam engine lubrication. But it is the more modern automatic device which has solved the problem of the use of graphite in steam practice, devices which are ordinarily known as force-feed lubricators. These consist primarily of a plunger pump actuated by some moving part of the engine itself and which pumps oil from a reser-

voir into the main steam pipe of the engine. It is not necessary to go into detail of the various types or of the devices for varying the amount of delivery of the oil. The feature to be pointed out is that they all have an oil reservoir in which may be placed an agitator which is connected with the pump mechanism, and which continually moves up and down with the movement of the pump itself. This movement effectually prevents any settling of the graphite and makes its delivery into the engine as absolutely regular and certain as that of the oil itself. The graphite may be added to the oil in any desired quantity, but the cases will be rare where more than five per cent. will be required.

Most beneficial results have followed the use of as little as one-half of one per cent. Roughly speaking, one tablespoonful of graphite to each pint of oil is a good amount to use, and under average conditions will provide splendid lubrication to the engine valves and cylinders.

#### A FATHER OF THE ROAD.

We reproduce herewith a sketch from "*The Decorator*" (London), of October 15. This little sketch was taken at New Castle by Mr. Pike and is an excellent off-hand likeness of Mr. Cummings who, for a quarter of a century, has



represented Messrs. Lewis Berger & Sons, London, in the North of England and the Midlands.

We cannot say this sketch was made with a Dixon pencil, but it is a most excellent pencil sketch and represents a drummer who evidently knows how to take good care of himself in every respect.

#### GIELOW GRAPHITE CUP.

**The Old One Was Good But the New is Better, and it is Demonstrated that Dixon's Graphite is a Great Help.**

The Gielow Graphite Cup for feeding graphite to the cylinders of engines has been described in previous numbers of GRAPHITE. Our representative at Chicago writes us as follows concerning same:

"I saw their last cup at work at No. 109 West Chicago Avenue. It has two plungers instead of one; the first puts

the graphite down in the tube, and the second forces it from there into the steam pipe; the people who are using it say it has been on for two months, and that it has worked very satisfactorily. The engineer is a one-armed man, and before using graphite he could not turn the fly-wheel of his engine over, but now he can do it very comfortably with his one arm. He is enthusiastic in regard to the working of his engine since the cup was put on.

"The report from the Metropolitan Elevated Railway is that they are very, very well pleased with the working of graphite, and the cup was satisfactory for a while, but one of the parts wore out in a shorter time than it should have done—it has been taken off and they expect to put in its place one of the latest patterns, within the next few days. They say that if the new device works all right, and does not wear out too quickly, they will want quite a few of them at this plant. They have demonstrated that graphite is a big help, and they want a device to feed it, by all means."

#### BELATED BUT HEARTY GREETINGS TO OUR VICE PRESIDENT AND GENERAL MANAGER, MR. JOHN A. WALKER.

"We read with the greatest interest the reproduction of your speech about your European 'tourn  e,' and cannot admire enough how you could acquire in a very short time such a profound knowledge of European matters. Not less we admire the elegant shape which you give your European impressions. Also we learn by GRAPHITE of September, of the well-merited ovation which the gentlemen of the Dixon Company prepared for you on your arrival.

"We beg to congratulate you and to express our wishes that you might work in full health many, many years, as you did until to-day, in the interest of your company and its friends.

"My wife and I hope that you and Madame Walker are quite well and we send her and you our kindest regards."

Yours most truly,

(Signed) DR. OSCAR KOLM,  
Hof- und Gerichts-Advokat, WIEN."

We have the following letter from our valued representative and friend, Mr. Adolf H. Paulsen, Bergen, Norway:

"It would have been a great pleasure for me to have been able to join the members of your staff in expressing their best wishes, congratulations, messages, etc. I have learned of the hearty welcome you received through GRAPHITE of September. Unfortunately I was not aware of the occasion, otherwise you would certainly have heard from me. Allow me, therefore, at this late date, to join your staff in expressing my esteem for your ability, character and other virtues, of which it has been my pleasure to be, partly, a recipient of.

"I am very sorry that you did not get time to visit me when you were in Europe this summer and get a few glimpses of this fascinating country.

"Hoping to see you and have a talk with you, I remain,

Yours very truly,

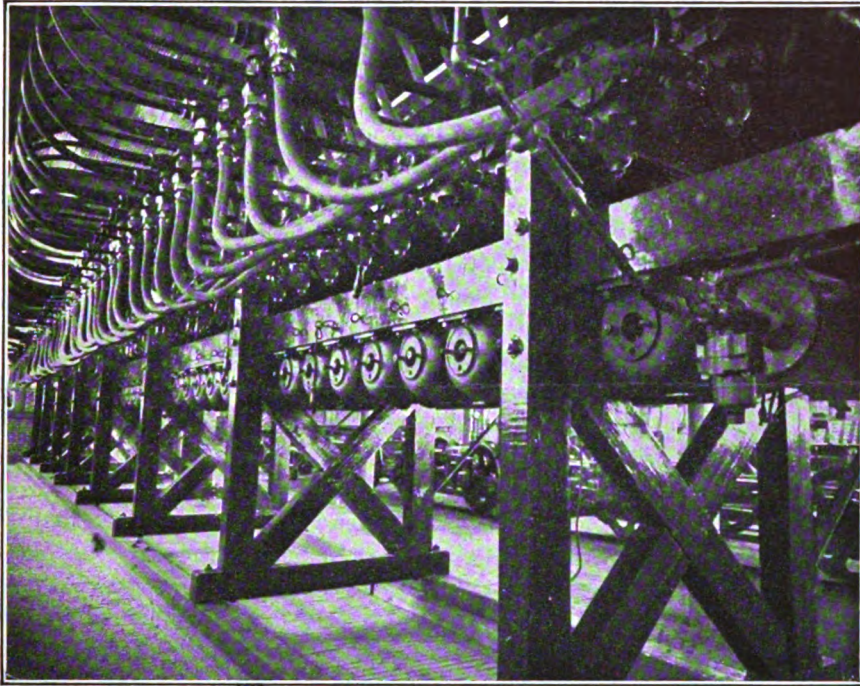
(Signed) ADOLF H. PAULSEN."



## EXPERIMENTS IN THE USE OF DIXON'S GRAPHITE IN AIR-BRAKE EQUIPMENT.

By PROF. W. F. M. GOSS, PURDUE UNIVERSITY.

For the purpose of these experiments, there was employed the air-brake testing rack of the American Master Car Builders' Association, two views of which are presented



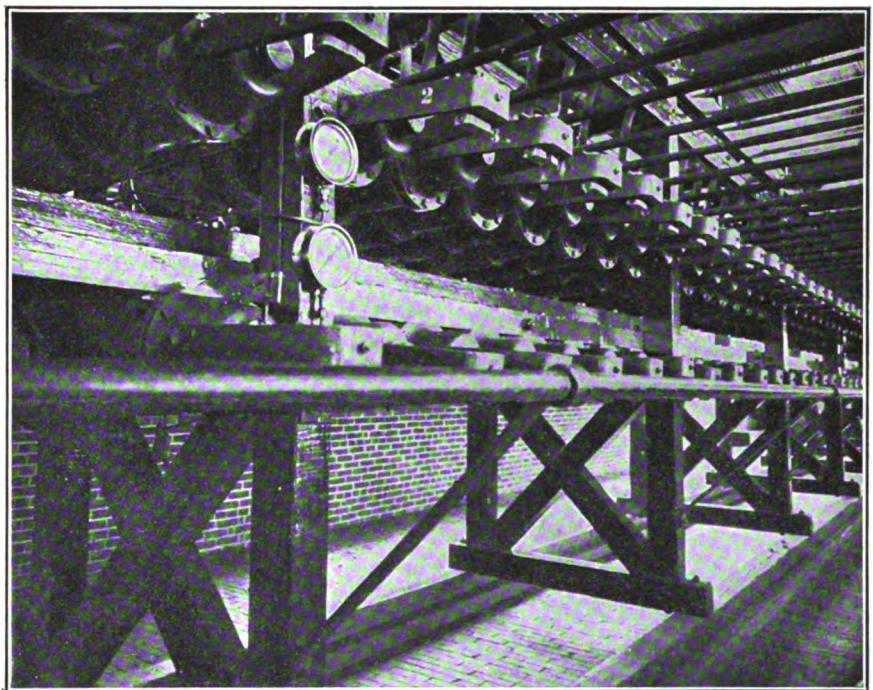
*Fig. 17.*

as Figs. 17 and 18. The triple valves are shown by Fig. 17, and the brake cylinders by Fig. 18. This rack, located in the laboratory of Purdue University, embraces a full airbrake equipment for two trains of fifty cars each. All piping, valves, fixtures, etc., which would be used on an actual train of cars, has a place upon this rack. The rack was designed and is now maintained for the purpose of determining the action of triple-valves used on freight cars which are interchanged from one road to another. Accessory to the rack is a chronograph, and all necessary gauges for determining the precise time of action of every brake.

The controlling mechanism of the air-brake system is the triple-valve, of which there is one for each car composing the train. It is the triple-valve which, responding to a reduction of pressure in the train-pipe, brought about by the engineer, permits air from the auxiliary reservoir to pass into the brake cylinder, thereby applying the brakes. It is the triple-valve, also, that responds to an increase of pressure in the train-pipe, and in so doing exhausts the brake cylinder and re-establishes connection between the auxiliary reservoir and the train-

line releasing the brakes. The mechanism of the triple-valve is necessarily delicate and nicely adjusted. Its wearing parts are of brass, and as the pressure imposed upon its rubbing surface is light, it was thought that all conditions were favorable to the use of graphite alone as a lubricator.

A test of triples, showing well their responsiveness to changes in pressure, is one which has come to be known as the "skipping test." It is well known by those familiar with air-brake performance that the brakes upon certain cars of a train may be cut out of action without interfering with the action of the remaining brakes. If, however, too large a number of brakes are cut out, or if they are grouped too closely together, then it becomes impossible to secure an emergency application on those brakes which, counting from the engine, are beyond the cut-out group. For example in the rack under consideration, it is found that when triple-valves are lubricated with vaseline, it is always possible in a thirty-car train to cut out alternate groups of two throughout the length of the train without interfering with the emergency action in those brakes which are left in service. When the valves are in good condition, and if the three following the engine are left in service



*Fig. 18.*

it is possible to cut out alternate groups of three; the exact number of cut-outs in any train always depending on their grouping. It is by means of this delicate test that it was proposed to test the value of graphite.

The process of conducting the experiments under con-

sideration consists in cutting out brakes in certain well-defined groups, and in making application, after which an additional brake or two will be cut out, the application repeated, and so on until a limit is found for which an emergency application fails on the brakes in the rear of the train.

In preparation for the test, all triple-valves in the rack were taken apart, wiped and thoroughly cleaned, lubricated with dry flake graphite, and restored to their places in the rack.

On starting the air pump in preparation for the test, it was found impossible to secure a pressure on the train line of more than forty pounds. It was found also that there was a constant blow of air from the exhaust of every triple on the rack. This was thought to be due to the presence of graphite between the slide-valve of the triple and its seat, which would raise the valve a sufficient amount to cause the leakage to be observed. Believing that a few movements of the slide-valve would bring it to its seat and thus stop the leak, repeated emergency applications were made. On first trial only the one brake nearest the engine went into quick action, but after repeated trials all ten brakes involving a ten-car train were made to work successfully. After this other brakes were added by twos until an emergency could be had on a thirty-car train, and after six applications were affected by exhausting the train-line from the valve of the fiftieth car at the rear of the train, a full fifty-car train would respond in an emergency application.

This preliminary work involved fifty or sixty applications for those brakes which were near the forward end of the train, and not less than fifteen for those triples which were subjected to the fewest number of applications.

The valves having in this manner been made tight, the formal skipping test was undertaken, first on a fifty-car train, next upon a thirty-car train, alternate twos could be cut out either with the first two in or out, but in the thirty-car train, action could not be depended upon if the first two were cut out. With alternate threes cut out, the first three being in, the emergency was obtained upon the sixth car of the fifty-car train, but no emergency could be obtained on the thirty-car train. The attempt to cut out alternate fours, the first four being in, gave emergency on the first four only, both in the fifty and thirty-car train.

Repeated experiments served to show that two consecutive brakes could be skipped with certainty at any place upon the train, both when fifty cars and thirty cars composed the train. Three cars could be skipped in the middle of fifty; two in the middle of thirty and one in the middle of a fifteen-car train.

The records obtained in the process of this work are very elaborate and it is not thought necessary to present them in detail. A careful study of the facts obtained gives evidence that under conditions of the test, the valves were less sensitive than normal.

The time record, as obtained for each test, shows the valves to have been slower in action with graphite than under normal conditions. For example, the time lapse between the application of the brake on the first car and that of the last car of the fifty-car train was three and one-half seconds longer when graphite was employed than under

the usual conditions with vaseline, the facts in this record being as follows:

	GRAPHITE.	VASELINE.
Seconds between time of action on first car and time of action on the last car of twenty-five car train, . . . . .	13.5	12
Seconds between time of action on first car and time of action on the last car of fifty-car train, . . . . .	28.5	25

Upon the conclusion of the tests with graphite, as described in the preceding paragraph, the triples were again taken apart. In this process it was discovered that the slide-valve of some of the triples was so firmly held to its seat that it could only be moved by the use of a lever of considerable length. The usual freedom of motion which characterizes several parts of the triple had in many cases quite disappeared. No evidence of damage appeared in any valve, and no surplus graphite was found. Having been thus taken down, the several parts of the triples were well vaselined and having been re-assembled, the triples were restored to their position on the rack.

Following the restoration of the triples, the schedule of tests previously run was in part repeated, whereupon it was found that the action of the triples was more delicate than has ever been shown to be before. The record shows that they were more responsive to skipping tests and the time of action was shorter than in any previous tests made upon them.

The important conclusions of the test may be stated as follows:

1. Graphite alone is not a sufficient lubricant for triple valves.
2. After graphite has been well rubbed into the working surfaces of the valves, and after this process has been followed by thorough oiling with vaseline the action of the triples was more delicate and more rapid than with vaseline alone, prior to the use of graphite.
3. The presence of the graphite on the metal surfaces of the valves, when operated with vaseline as a normal lubricant, serves to improve their action in a marked degree.

The facts presented in this appendix are from a thesis by Messrs. T. W. Newburn and C. B. Veal, Class of '02, Department of Mechanical Engineering, Purdue University, which thesis was presented to the Faculty as a condition for graduation. The subject of the thesis is "Tests of Air-Brake Equipment Involving the Master Car Builders' Air-Brake Testing Rack."

New York City has a "Crucible Club." Its meeting place is at Carnegie Hall. The Club claims to be "an important and attractive combination of forces to meet the demand of thinking people for genuine culture in spiritual science under the best auspices and on easy terms." The members of the Club deal in metaphysics, occultism, psychology, mental healing, astrology, palmistry, and "kindred sciences," whatever that may mean.

## BRASS MELTING.

(Continued from November Graphite.)

Not that there is any intention of using strong language here, we will leave that in the shop mixed with the gas that causes it, and in a few mild words explain the trouble, and suggest a remedy. As before mentioned, this trouble is caused by gas, the product of combustion being too often driven into the shop, polluting the atmosphere to such an extent that the health of human beings employed therein is endangered. For molders are human beings, although some people seem to doubt it and think that anything will do for people employed at such dusty, dirty work.

Many founders imagine that when power is applied to furnaces it is impossible to carry off all the gases, and so it is, with flues adequate for natural draught, but when the air supply to a furnace is increased by the application of a fan beneath the fire, the flue area must also be increased, unless the same was abnormally large before the fan was applied.

So if there is any gas in your shop your flues are too small, the remedy is to enlarge them, do not go to the trouble of cutting holes in the roof or to the expense of placing ventilating fans, which you will find are failures so far as removing gases is concerned. And right here, let me impress the fact that it is not always the main flue which is faulty, most founders make this generous in size, turn your attention to the flues connecting each furnace to the main flue. Your foreman may pooh-pooh the idea and advance all kinds of theories to the contrary, but do not listen to him, he needs educating on this point and see that he gets it, or get a new foreman.

There is no evading the fact, that if a flame is driven from beneath the covers of furnaces, the products of combustion are being driven into the workshop instead of through their proper channels into the outer air where they are harmless. In place of driving air through a furnace, in some cases the fan has been placed in the flue and by exhausting the air therefrom creates a strong draught through the flues, the furnace being operated the same as natural draught, that is with open ash pits.

With this system a high chimney is not necessary, and the atmosphere of the shop is entirely free from contamination by the products of combustion. It possesses one disadvantage to careless people, and that is the flues and their connections must be kept in good condition; should they be permitted to fall into decay, the melting capacity of the furnaces would diminish in proportion to the air leakage.

For this reason, unless exceedingly well built, brick flues are not so well suited to this system as are iron ones, because the average brick flue, built by the average brass melter or his foreman, is never built as well as the poorest bricklayer would do it, and consequently rapidly crumbles under the effects of expansion and contraction.

When sheet iron is used for brass-furnace flues, they are best when made circular in form, with rectangular cast iron connections to each furnace, the main sheet iron flue must be suspended and not allowed to touch a wall or any non-conductor; if the air has free access to it the flue will rarely

become red hot, and will consequently give good and economical service.

If the heat radiated from the flue troubles the melter, which it probably will, do not sheathe it in asbestos, or you will soon have nothing but an asbestos paper flue and a poor one at that, but hang a curtain of asbestos in such a manner as not to touch the flue, but still shield the melter.

## AN APPRECIATIVE SALESMAN.

Mr. John A. Walker, Vice President and General Manager of the Dixon Company, let one of the Dixon salesmen "have his head" in a quite important matter which was well handled, and the grateful salesman wrote as follows:

"I particularly like your plan, because it gives us salesmen some elasticity. It gives play for intelligence and gives opportunity for the man who works the hardest, finds out the situation most accurately, and can use or withhold the judgment permitted in the case. If you do away with the discretion, the elasticity ceases, and then the business is handled on fixed lines and no matter how hard we work or how much intelligence we put into it, we are not much better off than those who work less hard and do not bring as much knowledge and thinking to the subject, and to sum up, 'any old lummo can do business on cast-iron lines.'"

## DIXON'S GRAPHITE PIPE JOINT COMPOUND.

A Sample Testimonial.

We wish to say that we have used Dixon's Graphite Pipe Joint Compound on several large steam and hot water systems, and find it gives excellent satisfaction in making tight joints and preventing leakage; in fact we have never found its equal.

WELCH & AMBROSE,  
Plumbers, Steam and Gas Fitters,  
MANAYUNK, PA.

## THE DARKEY AND THE AUTOMOBILE.

"Law's sakes, you heah agen? Glad to see you; whar you come from dis time? Rochester? No, for sure? Dis morning?—you doan say so; that jes' beats me; to think I live to see a thing like that; it's a reg'lar steam-engine, aint it?"

"Sambo," called out a bystander, making fun of the old darkey, "do you know what you are looking at?"

"Well, if I doan, den I can't find out from dis yere crowd."

"What do they call it, Sambo?" someone else asked.

"Sh-sh's—that's a secret; an' if I shud tell you, you cudn't keep it."

"Is it yours?"

"I dun sole mine to Mistah Vand'bilt las' week; he name it de White Ghos'—after me."

"You mean the Black Devil."

"No I doan, he didn't want to hu't youah feeling; Mistah Vand'bilt a very consid'rate man."

Sambo carried our things in, talking all the time.

"Now you jes' go right into dinnah; I'll take keer of the automobile; I'll see that nun of those ign'rant folks



stannin' roun' lay their han's on it; they think Sambo doan know an auto'bile; didn't I see you heah befoh? and didn't I hole de hose when you put de watah in? Me an' you are de only two pussons in dis whole town who knows about de auto'bile—jes' me an' you."—*Two Thousand Miles in an Automobile.*

### COMMERCIALISM.

Won't everybody read Edward Atkinson's article on Commercialism in the October, 1902, *Atlantic*? The pith of it is this: that two hundred years ago the world was hardly a fit place to live in, that the average man was poorly housed, poorly clothed, poorly fed, poorly informed; that to-day it is exactly the reverse and that this has been done by material progress, by commercialism, and now, he adds, it is sickening to hear this age called material and hear the persons cry aloud against commercialism, against the very thing that makes the life of every one of us pleasant, compared with the past.

—J. A. W.

### RIGHTS AND DUTIES.

While there is so much both important and also vague talk in the papers about one's rights, how about—as a distinguished man put it—side-track the 'right's' subject a while and say something about one's duties?

### NEW JERSEY.

The state of New Jersey is near the top of the list in the value of its manufactures.

There are fifty-two states in the Union and New Jersey stands sixth, with over \$600,000,000 of manufactured goods to her credit.

—J. A. W.

### "DIXON

### THE LEAD PENCIL MAN

### SOMEWHERE BACK EAST."

An envelope addressed as above was promptly received by the Dixon Company. The accompanying letter was as follows:

"My father and I made a wager of one dozen lead pencils: he that you will receive this letter and I that you won't.

"If we get no reply from you within a month, I win."

The letter came from the far Northwest.

### DIXON'S FLAKE GRAPHITE FOR BOILER PLUGS.

A master mechanic of one of the prominent railroads made a statement at the Convention of Master Mechanics at Saratoga, as follows:

"I find that Dixon's Flake Graphite is of specially great value for use on 'boiler plugs.' It is necessary for these plugs to be removed frequently in order to clean boilers. By using Dixon's graphite on the threads when they are replaced, only a quarter of the amount of labor is required. The flake graphite is far superior to oil or red lead, as the oil burns off and the red lead hardens.

"The removal of plugs depends very much upon the water used. With some water, the plugs have to be fre-

quently removed. In some cases it is necessary to wash out the boilers of the locomotives once a week only, while in other cases it is necessary to do it daily."

## Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, type-writer work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing.**

**Dixon's Plumbago for Powder Glazing.**

**Dixon's Plumbago Foundry Facings.**

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite.**

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Cycle Chain Graphites**, for perfectly lubricating chains and gears of bicycles.

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Anti-Flux Brazing Graphite**, to prevent the spelter from adhering when brazing.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

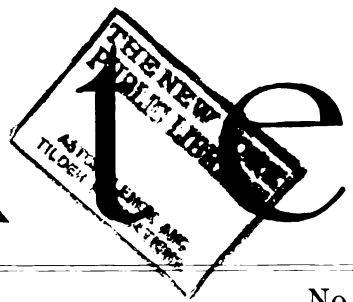
**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians.**

Special circulars with detailed information sent on request.

# Graphite



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JANUARY 1903.

No. 2.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

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## THE SCRIPTURES FULFILLED.

Some 3000 years ago, more or less, a biblical writer wrote: "Seest thou a man diligent in his business, he shall stand before kings; he shall not stand before mean men."

I have been diligent in my business, and Nov. 11, 1902, fulfilled the scriptures by standing before kings.

It was at a meeting of the New York Chamber of Commerce, of which the writer is a member, and the occasion was the opening of their new building.

The kings of commerce, of science, of law were there, about one thousand in number; not only this, but President Theodore Roosevelt and former President Grover Cleveland were both present and fanned the enthusiasm by opportune speeches.

If not technically "kings," one man has ruled and the other is now ruling the best land on this earth to live in.

The occasion was great. The building was superb. Dignitaries from all quarters of the globe were present. The president of the Chamber, Morris K. Jessup, in his address expressed the ideals of the members in language of great force and dignity and with finished grace of diction.

It was an occasion of a life time—a two hours when one was extra glad to be alive. —JOHN A. WALKER.

## PHOSPHORIZING METALS.

Mr. Edwin S. Sperry in *The Aluminum World* gives some interesting information in regard to the best method of phosphorizing metals.

In practice much difficulty has arisen because of the ready inflammability of phosphorus, which not only renders the situation dangerous but leaves the factor of uncertainty behind it so that, after the phosphorus has all been added, it becomes an open question about the amount of this element which alloy contains.

The handling of phosphorus is always accompanied by such risk. Its burns are particularly dangerous and it cannot be touched by the bare hands. Then, too, its vapor or fumes will, if inhaled in sufficient quantity for any length of time, produce ulceration of the jaw bone.

Most of these difficulties and particularly that of the easy inflammability, may be overcome by an extremely

simple operation, that is copperplating the sticks of phosphorus. Not plating them by means of electricity, but by their own property of reducing copper from its solutions.

The operation is carried out as follows, viz: Dissolve one pound of blue vitriol (copper sulphate) in one gallon of cold water in a glass or earthenware vessel. It may be dissolved in hot water and then cooled, but care should be taken that the temperature is sufficiently low to obviate the melting of the phosphorus. When dissolved, remove the sticks of phosphorus from the tin can in which they are shipped and place them in the solution. In a short time they will become covered with copper and if left sufficiently long a good thick coating will be obtained. The sticks must be moved about from time to time in order to prevent the portions which come in contact from remaining without being plated.

When left sufficiently long in the solution (about an hour is usually sufficient) the sticks may be removed and dried in sawdust or by absorbent paper. Great care should be used, however, in the removal of the sticks, as



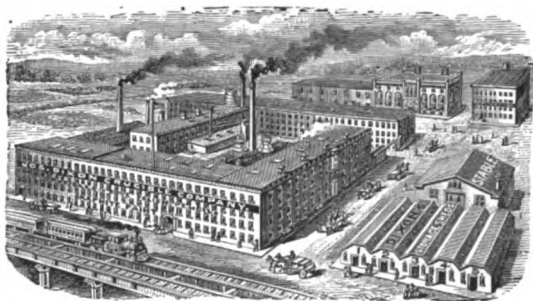
they are quite brittle and small portions may break off and thus expose the unplated material. If properly plated with the copper the phosphorus is now quite an ordinary substance and will not ignite spontaneously. Indeed, Mr. Sperry has allowed, for the sake of test, a stick of phosphorus so plated to lie in the hot sun of an August midday for several hours without ignition having taken place. It is generally advisable to allow the sticks to remain in the air for half an hour or so after they have been dried, as the complete expulsion of moisture is then assured.

The phosphorus may now be inserted into the metal in any suitable manner, either by means of tongs or a plum-bago phosphorizer.

The Dixon Company manufacture Graphite Phosphorizers in various sizes.

ESTABLISHED 1827.

INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

### SALESROOMS AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Horgen (Switzerland), Finland.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
*President. Vice Pres. and Treas. Secretary.*

JERSEY CITY, N. J., January 1903.

### DIXON AND THE NEW YEAR.

We spoke our little annual to the Dixon staff in December GRAPHITE, and in this, the January number, a word to our friends and customers will not be amiss.

First, we are proud of them. They are of the commercial aristocracy. They buy royally, with a free hand, and pay with princely punctuality. We know some of them face to face, with some we have exchanged hospitalities and have become friends as well as exchangers of products. They are in every country and of every speech, both in the Orient and Occident. In this little way we send the holiday good wishes to them all. We appreciate their friendship, we prize their orders. They extoll our product so loudly it will inspire us with a constant motive to set every improving system possible in active operation. Our products reach everywhere, for we reach the farm, the shop, the mill, the steamer, the vehicle, not excepting the automobile; we are found in the house, in the kitchen, in the office and in the pocket. We are proud of our calling, proud of our associates, proud of our customers and friends, and some day we may grow proud of ourselves.

Good wishes to everybody and a "Happy New Year" for all in 1903.

—JOHN A. WALKER.

### "TREASURER AWAY."

We sent a statement last week to a company whose letter head bears the names of a president, vice president, treasurer, secretary and general manager. To-day a letter came back dated December 13, saying treasurer is absent until about January 4, when they will pay. The amount at stake

is \$2.05. We wish that happy treasurer a good time in his absence, while we sit in ashes till January 4.

—JOHN A. WALKER.

### PENCIL POINTS.

Any one of Dixon's lead pencils has all of the good points of all.

Uniformity of lead, uniformity of grading, finish, decoration and mounting are some of the good qualities which make Dixon's lead pencils desirable to the user.

Any lead in a Dixon pencil is uniform throughout, the same at one end that it is at the other.



This may be true of other pencils. It is always true of Dixon's.

Dixon's lead pencils are sold at all first class dealers, and all such dealers will tell you that what we say is so.

Dixon's lead pencils are made with large thick leads, or small diameter leads, according to the wants of the users.

Some think that the large lead marks more easily than the small diameter leads.

If you are in want of colored crayons ask for Dixon's. They are used by railroads, insurance companies and in offices of all kinds and descriptions for checking, marking, etc.

Dixon's colored crayons have smooth leads and vivid colors, and are easily sharpened and retain their points well, and it is said that they produce better work than any other colored crayons made.

Not everyone who uses a lead pencil requires perfection, but everyone who uses a Dixon pencil gets it.

Dixon's pencils are made to suit the most exacting. The indifferent user gets the same pencil goodness as the most particular.

That is why stationers like to keep them. There are no complaints coming.

Dixon's lumber pencils have at all times, and under all conditions, been *the* lumber pencils.

Every lumberman wants Dixon's lumber pencils, although every lumberman has not been able to get them because we have been woefully behind on orders for many months.

Dixon's lumber pencils are made in only one degree of quality but in two degrees of hardness, making them suitable for either hard or green lumber.

Dixon's black and Dixon's red lumber crayons are preferred by surveyors because the marks never fade. Other colors are also made.

The best pencil made will not make a good stenographer

of a poor one, but the best stenographer is not superior to a poor pencil.

Dixon's shorthand pencils have that smooth, easy writing quality which reduces the mechanical work to the least possible effort.

Dixon's stenographer pencils are made in three degrees of hardness. They are round, light and do not fatigue the hand.

Using the right pencil has much to do with the stenographer's speed.

Dixon's drawing pencils are made in eleven degrees of hardness and meet all the requirements of artists and draughtsmen.

Altogether there are a thousand different kinds of Dixon's pencils.

A trip through the Dixon pencil factory is never forgotten by anyone that has had the opportunity of seeing the wonderful Dixon pencil machines and the never ending flow (during business hours) of lead pencils that come from them.

The stationer who keeps Dixon's American Graphite Pencils always in stock gets the benefit of the best pencil reputation and the best pencil advertising.

The man, woman or child who uses a Dixon pencil is happier and better for it.

### CRACKED CRUCIBLES.

*Cause of Cracking and How to Put in the Metal so as to Prevent Cracking.*

Much has been written about the annealing and proper treatment of graphite crucibles in order to prevent their cracking when in the fire, but little or nothing has been said about their splitting from other causes.

One of the most frequent causes, one, indeed, which is usually laid at the door of the crucible maker, is the cracking produced by the expansion of the metal in the crucible.

I do not mean by this that all cracks in the crucible are produced by this cause or that all classes of metal will cause it. It is particularly true of metal in large masses, such as copper ingots, and is more apt to occur on the first heat in the morning when the crucible is cold.

It is human nature, I presume, on the part of the melter to desire his metal to melt as rapidly as possible, and, therefore, if he is not dependent too much upon other influences, to finish his day's work in a shorter space of time. For this reason, when the first heat is started in the morning he carefully wedges the copper or other ingots into the crucible (indeed, I have seen them driven into tight places with a hammer) so as to get as many as possible in the pot to melt down before the others are added. Copper being an excellent conductor of heat, and, on account of the flames from the fires playing around the tops they become heated much more rapidly than one would expect, soon begin to expand and crack the crucible. Were the crucible red-hot the danger of cracking is very much lessened, for the clay which the crucible contains becomes plastic so that when the metal expands the crucible possesses a certain amount of flexibility. This explains the fact that the majority of crucibles are cracked on the first heat when everything is cold.

There are several influences which tend to prevent this expansion cracking, and one, particularly, is the use of skeleton scrap, chips or cabbages. These materials act as a sort of cushion or spring and so prevent the rupture of the crucible. Neither is the accident so liable to happen if all scrap is used but when large masses are employed, especially copper ingots, and rest horizontally in the pot.

The melter, I am sure, will not intentionally pack the crucible with ingots so that there is liable of rupture, but does it through not understanding the laws of expansion of metals by heat. An ocular demonstration of this phenomenon would undoubtedly aid him in understanding the subject. In conclusion, let me say that especial care should be used upon the packing of the ingots for the first heat or when the crucible is cold. Place them in the crucible vertically and so that they will lie loosely. Under no consideration place an ingot horizontally, for even though it may at first lie loosely, the melting of the metal below it allows it to sink down to a position where the diameter is less and thus produce wedging. I think if one gets into the habit of placing the ingots vertically or, perhaps, diagonally, there will be less broken crucibles in the foundry or casting shop.—EDWIN S. SPERRY.

### LINOTYPE GRAPHITE.

We prepare a finely pulverized graphite for the operators of linotypes and other type-setting machines. We prepare it in two forms; one a finely pulverized dry graphite and the other the same graphite, mixed with just enough oil to prevent it from flying. Some prefer one and some prefer the other. The oiled graphite is thought by, we think, the majority, to be more convenient, as it "stays where put."

We have a little pamphlet containing many testimonials and we herewith print one of the new ones just received. It comes to us from the linotype machinist of the office of the *Meriden Morning Record*, Meriden, Conn.:

"I prefer the oiled form; in fact, its efficacy was so obvious in a few days that I placed a small order with you direct. Heretofore all that I have been able to obtain in the way of graphite from our local dealers was either stove polish, very gritty, or a large flake graphite, dry. The special linotype graphite which you prepare is the only form which should be used."

### WHAT A SALESMAN SHOULD DO.

*Hardware* says: "The traveling salesman should ever keep in mind the fact that he is the direct representative of his house, and in his hands rests the reputation of that house.

Whatever his own wishes or inclinations may be, he should never let go of the fact that he is not at liberty to do as he individually pleases but as his house would wish him to do.

The salesman should first remember that his value is gauged by net results including not only such orders as are secured at once, but the general effect upon the future. The business is presumed to be perpetual, and often the work of the salesman will yield better value if directed to strengthen the position of his house for the future than to securing small present orders.

As noted above, the impression created by the salesman's manner determines the opinion of his principals. It is pre-supposed that the house has an honorable record and a good standing; these must in no wise be abated by any act of the representative. It will be unnecessary to mention that the salesman in dress, manner and habits should, at all times, be a gentleman, or, what is better, a man. Correct habits, while commendable on moral grounds, are imperative in business. Intemperance will not be tolerated; profanity is a mark of ill-breeding, while excess of any kind is sure to impair efficiency. The discriminating manager in these "strenuous days" has no use for any but those who are honest, reliable, thorough, earnest and undivided in allegiance. The degree to which these qualities are found usually determine the rate of advancement and responsibility.

Don't try to impress your customer with your superior knowledge; you are the seller, he is the buyer. Neither is subserviency nor timidity productive of good results. Show a willingness to listen and fully understand what the customer thinks he wants to purchase and assist him in getting it. Where your reason shows he is making an unwise choice, you can with tact and without in any way suggesting that he is ignorant or stubborn, show him the better way. Do this in such a way that your manner will impress him that your training and experience are better guides and that your suggestions emanate from a sincere desire to give him the best satisfaction."

(Continued in February Graphite.)

### IT IS A GOOD WORLD.

And It Can be Made Still Better if We Are Willing to do Our Part.

We doubt if there is a more hopeful and generally optimistic writer than the vice-president and general manager of the Dixon Company, Mr. John A. Walker. The following, which we take from *The Youth's Companion*, might well have been written by Mr. Walker:

The thoughtful person who looks around him must be impressed by the number of agencies at work for the bettering of mankind. There is the Church,—oldest of all,—there are schools, libraries, societies for the promotion of this and the suppression of that, clubs for local improvement, material and political, charities with a thousand ends in view, organized efforts without number, all bent on making human life a happier state of existence.

The wonder of it is that this incorrigible old world of ours remains for so many men and women a place of bitterness and sorrow. Whose fault is it?

Is it not often the fault of the comfortable citizen, busy as he should be with earning a living for himself and family, but content to leave the work of these various agencies for good in the few hands that have been guiding them? Does the thoughtful person always understand that some part of this good work for mankind belongs specifically to him?

If he thinks long and hard enough he will realize how fortunate it is that the good work of the world has so many subdivisions. From the very nature of each man and his surroundings there must be activities in which he cannot take a congenial and therefore an effective part.

Yet it must be a strange being in a strange place who cannot find already in existence, or waiting to be created, some piece of work not for himself to which he can heartily give some portion of his time and effort. It is a good old maxim which tells the person who cannot fish to cut bait. As more of us grasp and act upon the fact that some small part of the world's good work belongs to each one of us, the outgrown idea of life as a vale of tears will be thrust still farther into the past. To stand aloof and say, "This is no business of mine," is only to do harm.

### TWENTY-NINE CENTS AHEAD.

A customer that we had sold, failed. Failing to get any kind of satisfaction or any proposition for a settlement we put it into the hands of an attorney. The attorney's expenses all told were \$5. We received as a result, the first and final dividend on the account, \$5.29, so we were 29 cents to the good in this matter over and above legal expenses. We sent news of the same to the salesman who sold the bill and he replies as follows:

"We salesmen have for sometime been of the opinion that at the factory you were making so much money that you did not know what to do with it and this 29 cents is 'proof positive.' We now expect from this dividend that you will put up new buildings, buy more property, and discount your bills, and won't be surprised to hear that the various officers are buying automobiles."

—JOHN A. WALKER.

### ECONOMY.

P. R. Ramp, of Schenectady, N. Y., in the *Journal of the American Foundrymen's Association*, says that "Economy is something that is essential in carrying on a business of any kind." And, in regard to materials used in foundries, he says:

"Another item is 'plumbago,' 'blackening' or 'dry sand facing.' We may be paying 4 or 4½ cents per pound for a lead that is doing good work and peeling the castings in a very satisfactory manner, when along comes a 'supply man' and induces the purchasing agent to buy a carload of a cheaper lead, say for 2½ cents per pound. This lead he will probably say is used by several large concerns, whose product we know is all that could be desired. Here is where the impractical man is led astray. He does not consider what quality of sand the parties referred to are using behind this lead, perhaps this is a good open sand that will do the work nearly as well without any lead or facing. We try this lead on our work, our sand is close and contains matter which promotes the formation of gas, and this creates in the molten metal an uneasy motion while it is being poured and after the mold is filled before it solidifies. This action of the iron causes additional wear on the surface of the mold and the cheaper grades of blackening will wash and rise to the surface, thus producing a dirty casting."

The Dixon salesmen have frequently been met with this 2½ cent price from the purchasing agents of foundries and have asked us if we could not furnish something as cheap in order to meet the competition. The Dixon Company have not, at any time, attempted to make "cheap facings."



Our specialty in the facing line is pure plumbago facing which we prepare most carefully and sell it at the lowest possible price consistent with quality.

#### SEVENTY-FIVE YEARS AGO.

Mr. Joseph Dixon's nephew, Moses Sweetser by name, now 86 years old, writes us:

"I remember well the Dixon Company's birth seventy-five years ago at Salem, Mass., when Joseph Dixon directed and Joseph Hill and Peter Girdler stood at the wheel and turned out the Dixon crucibles by hand, a few every day. Then there were few buyers and poverty reigned. Now how changed. Then Uncle Joseph moved from Salem in 1827 to New Bedford, then to Taunton, Mass., then Mystic, Conn., and then to Jersey City, where it found a resting place and is now so big that it can't wander about."

#### THE LADY AND THE NECKTIE.

We receive the following from the Boston *Herald* through our friend, Mr. Jos. M. Wade, of *Fibre and Fabric*:

The need of a lead pencil, just any kind of an old worn-out one, caused a lady no end of embarrassment on an early car from Cambridge the other morning. She sat running over her shopping list, when suddenly she thought of something to add to it. She looked in her pocketbook, and ransacked all its divisions, card case and all, but no pencil did she find. Modestly she hesitated about asking her neighbors, but with a quick resolve she finally leaned toward a gentleman seated by her and, holding up her list, said loud enough for those in adjacent seats to hear:

"Excuse me, sir, may I borrow your necktie a moment?"

The gentleman's astonishment was expressed in his silent facial contortions, until the lady reddened deeply.

"My necktie, madam?" he replied, with arched eyebrows.

"Didn't I say 'pencil'?" she asked. And then everybody, grinning behind newspapers, knew what the lady added to her list.

#### WHY PAINT DOES NOT DRY RIGHT.

An inquirer from Nova Scotia asks *The Master House Painter* what he shall do to make his paint dry better. The following is the answer made:

"The trouble is no doubt due to the raw oil you use, and certainly not to the lead. It being difficult to get good raw linseed oil, we hardly know how to help you out of your dilemma. Adding turps and much driers certainly would injure the wearing qualities of the paint, but we see no other means for making it dry inside of 24 hours, as you desire, in order to avoid the cold and damp of your atmosphere."

The Dixon Company avoids the trouble that comes with the use of raw linseed oil by buying fire boiled linseed oil only. That fact partly accounts for the great durability of Dixon's Silica-Graphite Paint.

#### WHAT WE CAN LEARN FROM FOREIGNERS.

We have the following letter from Italy:

"We had the pleasure to have your respectable address and we honour to write and to inform you that we should

be for nothing more to offer our services for to represent you in Italy, having we founded for many years a commercial house of representatives in Naples.

"Our many to know of commercial business of the places and the prudence in to contract the business, its allow us to assure you that in to give always more at the business we will neglect no to guaranty your interest.

"In the hope that you shall welcome to bid at our offer will sent us samples, catalogues and give us instructions and conditions that you do with your agents.

"Please to accept our sincere thanks beforehand and the assurance of our profound respect."

Now, while some may be amused at the language-construction of this letter, yet it carries with it a very big lesson. Our own vice president and general manager, Mr. John A. Walker, who has been in different parts of Europe a number of times in the interest of the Dixon Crucible Company, has written in the columns of *GRAPHITE* of the deficiency of the Americans in the matter of languages. It is not uncommon for a foreigner to be able to speak fairly well in two or three languages other than his own; frequently the foreigner will speak other languages fluently.

No one will have the least difficulty in comprehending from the above letter the wishes of the writer.

A Norwegian who is the agent of the Dixon Company in Norway was lately at the Dixon office and surprised us all by his fluent command of the English language.

Few American business men would be able to express themselves equally well in the language of any foreign country to which they may be writing. Business men abroad also seem to be better equipped with the technicalities of general business methods than Americans.

#### A NEW GRAPHITE FORCE FEED PUMP.

Seven Times More Hours' Work with the Same Quantity of Oil  
Is the Experience of one Man.

The Milwaukee Metal Working Company, Milwaukee, Wisconsin, are preparing a pump for feeding graphite to engine cylinders or bearings. The pump is a simple contrivance intended primarily to feed a mixture of graphite and cylinder oil to the engine cylinders, but easily adaptable to feed a similar mixture to the bearings of the engine. The new and strong feature of the pump is the absence of all check valves, the construction being such that there is no possibility of the graphite mixture adhering to or clogging up any part of the pump, no matter how much graphite may be placed in suspension in the oil. They have had one pump in operation for three months, and the engineer using it makes the following report:

"My engine is a single Corliss of the Allis-Chalmers make, with a 18x48 cylinder, and before using your pump the cylinder required one quart of best cylinder oil for every eleven hours' run. By the use of a mixture of cylinder oil and graphite (1 tablespoonful to a quart of oil) and your pump I am now making from 73 to 80 hour runs with same quantity of lubricant formerly used in eleven hours, and I find my engine running much more smoothly and without the sticking of the valves which was formerly noticeable. I have on two occasions, since using the graphite, had my cylinder heads and valves off and I have found the surfaces

absolutely smooth and polished and no accumulation of graphite whatever."

Their pump is adjustable so that any desired quantity of lubricant may be fed with each stroke of the pump, and also adjustable so that the relation between the strokes of the engine and of the pump may be varied at will. Any desired proportions of cylinder oil and graphite may be mixed to suit the needs or wishes of the engineer.

They claim that their device will feed graphite continuously and in perfectly regulated quantities.

#### GRAPHITE FOR CYLINDER OF NAPHTHA LAUNCH.

I used the sample of Dixon's Fine Flake Graphite in the cylinders of my naphtha launch which, owing to an accident, had been roughened by salt water. I dusted the graphite on the surface after oiling and have had no trouble with it now all season.

I used Dixon's Graphite Compound liberally on the cylinder head packing and on several other bushings and packings.

I use Dixon's "Graphitoleo" constantly on the ball-bearing thrust and other bearings of the shaft and I find a little flake graphite added to the lubricating oil for other parts, a noticeable help to the engine.

Yours very truly,

CHARLES E. BEVINGTON,

24 Park Place, New York City.

#### GRAPHITE IN "MOBILE" CYLINDER "THE GREATEST THING ON EARTH."

I put about a tablespoonful of Dixon's No. 635 Graphite into a quart of cylinder oil and it works perfectly in a Swift Sight Feed, class G, cylinder oiler.

I have rather heavy oil and the graphite does not settle but seems to be held in suspension perfectly.

I also use this graphite on all bearings on my Mobile. I think it is the greatest thing on earth for automobiles.

W. E. HIBBARD,

Agent for "Mobile" Steam Carriages,  
Manchester, Conn.

#### LINOTYPE GRAPHITE.

##### TESTIMONIALS.

YORK, Pa., Sept. 2, 1902.

Joseph Dixon Crucible Co.,

Jersey City, N. J.

GENTLEMEN:—Kindly send one five-pound can of your No. 635 graphite, ground in sufficient oil to prevent flying.

Our linotype machinist, after thoroughly testing the oiled and dry graphite, is enthusiastic over the results obtained by using the oiled. He says as follows:

"The space-bands are kept in excellent condition, working freely in the sleeve. The small quantity which adheres to the space-bands is collected by the matrices and is just sufficient to keep the letters moving nicely in the magazine channels; the graphite at the same time repels any metal from adhering to either space-bands or matrices.

"Our machines are kept going one hundred and four

(104) hours weekly on an average of about 5,000-ems per hour. Although the present matrices have been in constant use for more than a year, the print is free and clear from hair lines. This result is due to the use of oiled graphite for cleaning the space-bands. It is also invaluable as a lubricant for some of the bearings and for keeping the mold-face in good condition."

THE GAZETTE COMPANY.

In replying to your favor of the 9th inst., your very generous samples of Dixon's No. 635 Graphite reached me safely and I meant to acknowledge their receipt sooner and send at least a small order for some of the graphite, but I had a supply of the "old kind" on hand, and the powers that be in the front office are inclined to think it should be used up before ordering any more, which is no doubt quite proper from a "front office" standpoint. However, the next graphite ordered will be Dixon's No. 635, although our plant is small, as I said in my application for the samples, and our trade will not amount to much to you.

I have thoroughly tested the Dixon's No. 635 Graphite, in both the dry and oiled forms, and to say that I am pleased with the results is the statement of a fact in a decidedly mild form. The graphite is simply the acme of perfection in its line, and differs as much from the kind I have been using, which is the best I could get, as the best clock oil differs from common engine oil.

As you may have suspected before, linotype machinists are somewhat prone to become wedded to their own particular "way" about things regarding the machine and to consider the methods of other men in the same line entirely wrong. While I do not claim to know it all, and indeed have very much to learn yet, I am an emphatic advocate of keeping *oil in any shape or form* out of the channels of the linotype magazine and off the space bands and matrices for the very reason that no matter how high a quality or how small a quantity is used, it forms a basis for more or less dust-collecting and "gumming up," which is, as linotype machinists know, especially fatal to the perfect working of matrices in the channels. Hence I use nothing but dry graphite, and the finer the better. The tendency of your graphite to "fly" is no objection whatever, and its fineness only adds to its desirability and its quality as a lubricant. There may be a little waste from its "flying" qualities, but that amounts to nothing in comparison to the satisfactory results obtained from its use. When occasion demands a pomade, it can be easily and quickly made by the use of a little good oil and the "635." Before receiving the sample of your dry graphite I had used several different kinds, and in most cases the trouble I thought to overcome became worse and I had about given up the graphite idea entirely, but I have been re-converted. I have used the "635" in the magazine channels, for rubbing up space bands, and for polishing matrices, and the results have been highly satisfactory in every instance. The proverbial "greased lightning" has a worthy companion in the "635" and "Greased Lightning Graphite" would be a good trade mark for it. I use it on the inside of mold-wheel, on the mouth-piece and anywhere that metal is liable to stick or collect, and I find that tendency for metal sticking to those parts is

greatly lessened. "Dixon's No. 635 Graphite" is all right. It is what linotype machinists have been looking for and failed to find until now.

Trusting you will pardon my somewhat enlongated desertation on the "Graphite Question," upon my promise not to inflict you again, I am,

Very respectfully yours,

A. E. BENSON, Machinist-Operator,  
Durango Evening Herald.



**NELLIE, THE PENCIL GIRL.**

*The World, New York.*

*(From a Sketch by Haydon Jones, Illustrating Race Track Superstitions.)*

## GRAPHITE AND WATER FOR BOILER FEED PUMP.

Object Being to Get Rid of Oil in Boiler.

As an experiment we have been using Dixon's No. 2 Flake Graphite mixed with water in place of cylinder oil on our boiler feed pump, which requires three pints of cylinder oil in twenty-four hours.

We use an ordinary tallow cup with a brass plug driven in the throat, and drill a 1/16th inch hole through it as described in your pamphlet. We fill the cup twice each shift of eight hours with a mixture of water and a half teaspoonful of graphite. The pump works as well as with oil; the rods have a perfect polish. I made this experiment with a view of ascertaining whether or not we could use graphite in place of oil on a 10x20x12x18 pump, and are now preparing to do so, my object being to keep oil out of the boilers as the pump is condensing and oil is accumulating in boilers.

L. S. BRAINERD, Chief Eng.,  
Murphysboro W. W. E. & Gas Co.,  
Murphysboro, Ills.

## A GURGLESS JUG.

We notice in the *Scientific American* that a man has invented a gurgless jug. There may be a place for such a

jug, and the inventor very likely thinks he has filled a long-felt want, but in our youth an old fellow used to say that one-half of the pleasure in drinking from the jug was the gurgles of the jug saying, "good, good, good."

## "NIGGING."

It ought not to be necessary for the editor of *GRAPHITE* (but allee samee it is), to call attention to a species of "nigging" in settlements. Customers ask cash discount terms and are informed of the rate of discount and that it is based on remitting ten days from date of invoice,—but nevertheless, some wait twenty, some thirty, and some even sixty days, and take off the cash rate. This, of course, is always objected to, and reasonably so, as cash is received and discount given for ten days time only. To take the additional time is "nigging" which needs this protest.

—JOHN A. WALKER.

## THE TRUSTS.

The following by Brook Adams is worth considering:

"Few communities have succeeded in feeding and arming themselves. From the beginning, therefore, men have obtained wares from strangers. This is trade. To trade, the buyer and seller must meet. At first it was a meeting place by the road, then a settlement, then houses multiplied, then market days and fairs, then a tribunal to settle disputes, then the mechanism of trade, roads, etc. Hence civil society and government are an outgrowth of trade. Administration by masses is cheaper than in detail. Masses take the form of corporations; the men who rise to their control, rise because they are the fittest. The life of a nation lies in these masses. America holds its tenure of prosperity on the condition that she can undersell her rivals, and she can not do so if our administration machinery creates undue friction."

—JOHN A. WALKER.

## AMERICA vs. GREAT BRITAIN.

The American railway manager reckons that his locomotives are capable of a given amount of work. He extracts that work as fast as possible because he can replace the engine later with a new and better machine.

The British manager works on the opposite principle. He rests his engines, repairs them, nurses them and boasts that he can exhibit relics of the time of Stephenson.

—BROOK ADAMS.

## TESTIMONIALS FROM EUROPE.

The following interesting testimonials have lately been received by us. It certainly speaks well for goods that receive such recommendations from all parts of the world:

EDINBURGH DISTRICT, March, 1902.

LEITH SCHOOL BOARD.

In each school there are about three miles of steam piping in coils for heating purposes, and the steam in these pipes is always kept at a pressure of 60 lbs. The pipes being coiled, on one side of them cold air is blown, and on the other side the condensed steam drips down. The surfaces were cleaned, Dixon's No. 4 Paint was applied, being well rubbed in, and is now practically part of the metal

itself. Before using Dixon's Silica-Graphite Paint, all kinds of black varnish and asphaltum paints were tried, but none would stay on more than two or three weeks at the outside.

MESSRS. DUNCAN, FLOCKHART & CO.,  
Manufacturing Chemists.

Used two coats of Dixon's No. 2 Paint on chlorine stills, and though this was four months ago the paint is still in very good condition, the chlorine water running constantly over it. Before using graphite paint they used oxide, and had to paint these stills every other week. Since their first order for 10 gallons of graphite paint (which was used on these stills) they have ordered 30 gallons for painting the ironwork on the inside of roofs.

#### DIXON'S COMMUTATOR GRAPHITE.

Wherever Dixon's Graphite Brushes have been put in it has made unnecessary the use of any commutator dressing. Where Dixon's Graphite Brushes are not used the Commutator Dressing is then necessary. Some idea of the value of Dixon's Commutator Dressing can be gotten from the following:

"I have been using Dixon's Commutator Graphite some time now and I find it all you claim for it. It prevents sparking and cutting of commutator and I am much pleased with it.

J. W. ALLEN,  
Chief Engineer, Hering Building,  
Philadelphia, Pa."

"After giving Dixon's Commutator Graphite a thorough test will say that it is all you claim for it, and I am free to recommend it to those who require a lubricant of this character.

FREDERICK SCHIMPF,  
Engineer, Brown & Bailey Co.,  
Philadelphia, Pa."

Those who are not familiar with Dixon's Commutator Dressing can receive a sample by sending postal with name and address.

#### WE ARE NOT BURNED OUT.

The other day we received a postal card from a lady living in Massachusetts. It was as follows:

"*The American Kitchen Magazine* advertised Dixon's Stove Polish. My grocer tells me that the Dixon establishment has been burned out. Now is there any place where I can get Dixon's Stove Polish? We live on the seashore and things rust badly, my gas stove especially. Kindly let me know if Dixon's Stove Polish is to be had anywhere in Boston. If it is not to be had in Boston, I will cover price of cake and whatever the expense of sending it to me. If it is sold in Boston anywhere, let me know where the place is and I will get it and save you the trouble of sending it."

Past experience has evidently taught this lady that for lasting qualities there is no polish in the market that can equal Dixon's celebrated Carburet of Iron Stove Polish.

## Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, type-writer work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing.**

**Dixon's Plumbago for Powder Glazing.**

**Dixon's Plumbago Foundry Facings.**

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite.**

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Cycle Chain Graphites**, for perfectly lubricating chains and gears of bicycles.

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Anti-Flux Brazing Graphite**, to prevent the spelter from adhering when brazing.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians.**

Special circulars with detailed information sent on request.

# Graphite

THE NEW YORK  
PUBLIC LIBRARY  
ASTOR, LENOX  
TILDEN FOUNDATIONS

VOL. V.

FEBRUARY 1903.

No. 3.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

COPYRIGHTED 1903 BY THE JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.

## JOSEPH DIXON, INVENTOR.



It is never out of time, season or place to say something concerning Joseph Dixon, the founder of the Joseph Dixon Crucible Company. The following comes to us as an extract

from *Drake's American Biography*, and it gives some account of his numerous inventions :

"Before he was twenty-one he invented a machine to cut files; afterwards he learned the printer's trade, then wood engraving, then lithography, and became a thorough chemist, optician and photographer. He was probably the first to take a portrait by the camera; he first used the reflector, so that the subjects should not appear to be reversed. He built the first locomotive with wooden wheels, but with the same double crank now used. He originated the process of photo-lithography. To guard against abuses of this process, he invented the system of printing in colors on bank notes and patented it, but never received any benefit, all the banks having used it without pay. He perfected the system of making collodion for the photographers, and aided Mr. Harrison in the mode of grinding lenses for camera tubes. He is the father of the steel-melting business in this country, is widely known as the originator of the plumbago crucible as now made, and his establishment in Jersey City is the largest of its kind in the world.

"Among other things beside the above, Mr. Dixon made a machine to cut devices on rollers used in calico printing, fast colors for calicoes and other fabrics, green ink for bank notes, improvements on daguerreotypes and photographs, devices for making lead pencils (the Dixon pencils are among the best, if not the very best, made in this

country), improvements in steamboats used in Lynn in 1823, improvements in dyeing, pyrotechnics and an organ to go by steam, water or weights."

## FIRES IN COTTON SPINNING MILLS.

**A Possible Prevention When Caused by Friction in the Headstock of the Mules if Graphite is Used Instead of Oil.**

Messrs. W. H. Mitchell & Co., engineers, merchants and manufacturers at Manchester, England, and agents for the Dixon Company's Graphite Productions, write us that they have lately had in their immediate neighborhood two fires in cotton spinning mills caused by friction in the headstock of the mules.

In one case the fire was attended with loss of life. It is the opinion of Messrs. Mitchell & Co. that if graphite had been used as a lubricant, the fires would not have occurred.

In the first place, for this purpose, graphite is probably even superior to oil; furthermore, it glazes the bearing parts with a coating of graphite that is in itself fireproof. With oil there is always considerable more friction, and when the heat gets to a certain point the oil ignites and rapidly conveys the fire to all surrounding structures.

Messrs. Mitchell & Co. reported that the last fire occurred at Springfield Mill, belonging to the Bridgewater Spinning Company, Patricroft. The hands had just returned from dinner, and there were about 300 people in the building when the alarm was given.

Like the Vernon Mill disaster, the fire was caused by friction in one of the headstocks, and spread with such alarming rapidity that the mill brigades were powerless.

## IS THIS A JOLLY?

**Or Does It Come From a Man Who, Like Ourselves, Believes That for Toughness, Smoothness and Durability There is no Pencil Like Dixon's!**

"BLOOMINGDALE, O., Oct. 27, 1902.

"JOSEPH DIXON CRUCIBLE CO.,

"Jersey City, N. J.

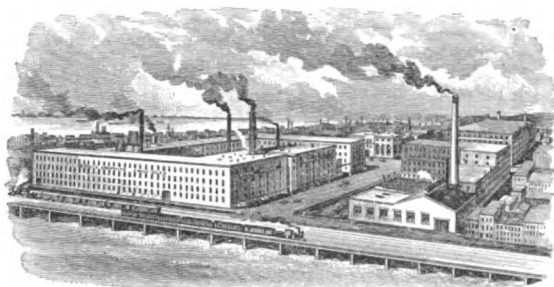
"Gentlemen :—

"I have been using one of your pencils for seven weeks for scribbling on a barn I have been working at, and it had been used some when it was given to me, and it is not a carpenter's pencil either, and there is four inches of it left yet, and it is it I am using to scribble this with. And seeing your advertisement in *Our Times* that you will send for sixteen cents pencils worth double the money, I would like to have them, as we cannot buy your pencils here at any price.

G. W. RALSTON."

ESTABLISHED 1827.

INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

### SALESROOMS AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Horgen (Switzerland), Finland.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., February 1903.

### THE PENCIL.

(With apologies to Samuel Woodworth.)

How dear to this heart are the scenes of my girlhood,  
When fond recollection presents them to view!  
Our room and the chapel, the much-used text-book,  
And every loved spot that my college days knew!  
My old, creaking seat, and the desk that stood by it,  
(I blotted it sadly, I am sorry to say),  
The "gym" and the basket-ball rooms that were nigh it,  
And e'en the old pencil that's wandered away—  
The little round pencil, the old chewed-up pencil,  
That stump of a pencil that's wandered away.

An old chewed-up pencil, but Oh, what a pleasure,  
As often at lunch, when my studies were low,  
I called it a jewel and hailed it a treasure,  
(To write out my tasks for next hour, you know.)  
And when, unprepared, came an examination,  
And imagination was called into play,  
I found it the source of a great inspiration  
To chew at that pencil, and think what to say.  
The little round pencil, the old chewed-up pencil,  
That stump of a pencil that's wandered away.

—Norman College Echo.

### A RAILROAD ENGINEER'S LETTER.

"I tried the samples of Dixon's Flake Graphite in my driving-box and also used it in the cylinders and in the air-end of pumps, and I am satisfied that it is just what you

say it is. I had one driving-box that would not run ten miles without water on it. I used some of the graphite in the packing and box runs cold now. The air-pump gives no more trouble and the valves and cylinders are not groaning and squeaking as of old.

"I have obtained a box of the flake graphite from the dealer here and am much pleased with the results obtained from the use of it.

"I have been speaking with several engineers on the road about using Dixon's Graphite, and I know of two now that are using it and are satisfied that it is all right.

"I shall always speak highly of Dixon's Graphite, as I know it is all right."

### GRAPHITE FOR HOME USE.

One of our Ishpeming, Mich., customers writes us:

"It may be of use to you to know that Dixon's Graphitoleo has given very good satisfaction on the spacing mechanism of our typewriter, causing it to run more smoothly and with less noise.

"We have also found that Dixon's Graphite Compound works admirably on gas connections for Welsbach lights and makes the joints turn easier instead of gumming them as white lead in the usual form is liable to do."

There are perhaps thousands of places in the home, office and family where some form of graphite will prove helpful.

### GRAPHITOLEO.

The mechanical engineer of the Toledo Automobile and Manufacturing Company, manufacturers of gasoline and steam vehicles, West Toledo, Ohio, writes us:

"We beg to acknowledge receipt of the samples, which we certainly appreciate, and would say that 'Graphitoleo' appeals to us as far superior to any lubricant for bearings of any description that has ever been compounded, as it is impossible to keep a hard lubricant on the small bearings found on automobiles and difficult on larger bearings."

"BRIDGEPORT, Conn., August 9, 1902.

"I beg to advise you that the use to which I put the samples of Dixon's Graphitoleo and Flake Graphite has demonstrated that they are products worthy of rank with Dixon's splendid pencils, and I couldn't give them a higher praise.

"The Pipe Joint Compound I have (fortunately) thus far no occasion to use, but I am carrying it along for use in a future emergency.

"I notice that I am having seemingly less trouble with leaky stuffing boxes and cylinder stems on my carriage since I mix a teaspoonful of graphite with a half-pint of cylinder oil; and I am trying the experiment of using no oil whatsoever on the bearings of the cross-head water-pump—just Graphitoleo. As for the steering gear, it hasn't squeaked since I commenced to use the latter preparation on the ball-joints of the transmission rods.

"Faithfully yours,

"WILLIAM PERRY HOPKINS,  
"Attorney and Counsellor-at-Law."



### DIXON'S GRAPHITE FACINGS.

Graphite, as a facing, is put on the surface of a mold for the purpose of preventing adhesion of the metal to the sand of which the mold is composed.

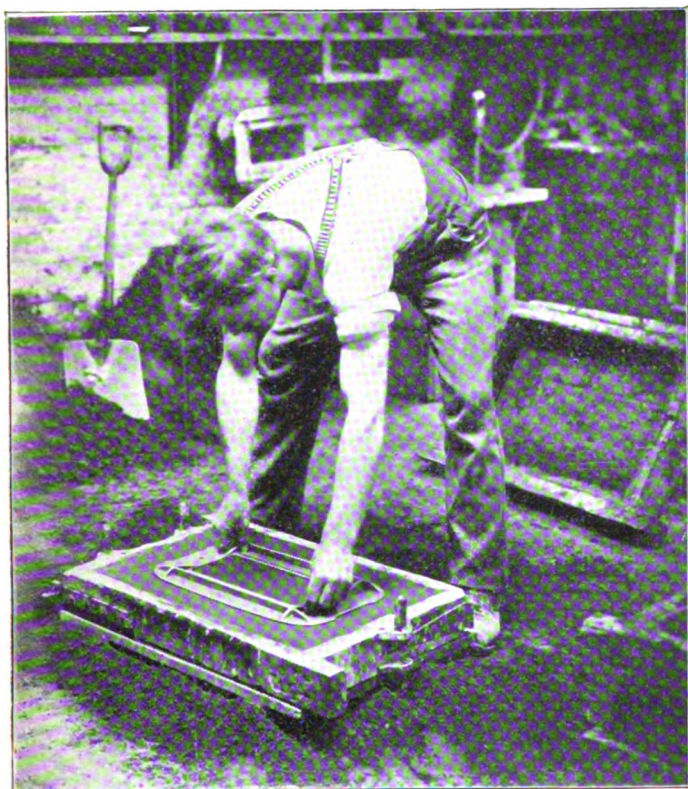
A graphite facing saves cleaning of the castings, and gives them a far better appearance.

When a properly prepared graphite facing is used the surfaces are very much easier to work when the castings are sent to the machine shop.

Wherever the molten metal burns into the sand of the mold it causes hard spots on the castings, which quickly dull the edges of cutting tools.

The reason why a graphite or "silver lead" facing, as it is sometimes called, makes a better casting and prevents hard spots is as follows:

Graphite is one of the forms of carbon and is a combus-



tible material. When the molten metal is poured into the mold, the air in the mold and the air carried in by the stream of melted metal furnish oxygen enough to bring about a certain amount of combustion, forming a gas between the metal and the mold.

When a drop of water falls upon a hot stove it rolls about; the water itself never comes in contact with the hot surface of the stove, being separated by a film of vapor.

It is precisely a similar condition which exists in a mold where a graphite facing is used. The outer portion of the facing begins to burn and a film of gas forms between the facing and the iron. This effectually prevents any adhesion of the metal to the sand, and just as long as this gas film exists no adhesion can possibly occur.

With regard to the difficulties to be met with in any foundry work, it is understood that the facing must burn in order to be effective, but, at the same time, if it burns

too much—that is, gives off too much gas—we immediately get into difficulty. A proper facing will adhere perfectly to the sides of a mold, and will burn and form gas in a slow and regular manner—that is, burn just enough to furnish this little film of gas referred to above. We want to form the gas, but to form only the least possible amount of it, and at the same time this gas must be formed during the entire time that the metal is in the fluid condition.

Another point following this is the fact that two bodies cannot occupy the same space at the same time, so that in using a cheap facing which burns fast and gives out a large amount of gas, this gas is liable to become pocketed inside of the mold, and so prevent the molten iron from filling the mold. This is likely to cause what are called "cold shuts" in castings. The ordinary cheap coal facings act in this way. Improper facings run before the metal. Some facings are not sufficiently adhesive to the sand mold surface. The hot iron, coming in contact with them, immediately drives out the sand, and, if an unsuitable facing has been used, it will run and leave the mold surface bare. This is why the Dixon Company make such a variety of facings.

We have lately published an attractive and interesting circular on the subject of Graphite Facings which we shall be glad to mail to any one interested.

### GRAPHITOLEO FOR THE "OLDSMOBILE."

The "Oldsmobile" has been a popular machine. Hundreds, and very likely thousands of them, have been sold, and the quiet running of the machine has been largely dependent upon fibre gears. These gears, however, had a comparative short life and in many cases bronze gears were substituted for the fibre gears. The bronze gears were not as quiet running as the fibre gears and, in looking about for something to lessen the noise, the owners of the machine naturally turned their attention to Dixon's Graphite. A physician in Norwich, N. Y., writes us as follows:

"The 'Graphitoleo' you sent me met the requirements perfectly. The bronze gears now run as quietly as the fibre did. I ordered a five-pound package from a New York house."

The following comes to us from a gentleman in Chicago, who used Dixon's Flake Graphite mixed with oil for his "Oldsmobile":

"In regard to using graphite on 'Oldsmobile,' I use graphite mixed with oil quite freely on several parts of the engine, especially those where the oil will be readily thrown off when the engine is running. This especially refers to the change gears. The first day running the wagon the change gear was oiled carefully as per instructions, but with all the care it ran dry and started to stick, making it necessary to oil it before it was free in the bearings. Since this failure I have been using a little graphite mixed with oil and can safely run 100 miles with a single oiling."

### GRAPHITE AND TALLOW FOR DIES.

A superintendent of a large manufacturing plant where much stamping work is done, sends us the following:

"While I do not wish to be quoted in the matter, I do

not hesitate to advise you that graphite is specially useful for die work. We use one-half graphite and one-half common tallow and find that this gives very good results, much better than plain oil or tallow. It is much easier on the dies, as they do not check as bad with this mixture as with the oil or tallow."

### **FLAKE GRAPHITE MAKES LIGHT REPAIR BILLS AND IS ALWAYS A SAFEGUARD.**

Mr. Arthur Davies, engineer for the Union Talc Company, Fowler, N. Y., writes us:

"During the last three years I have been running an 18x24 Harris-Corliss engine that is overloaded and in a very dusty place. The engine causes me very little trouble, as I always have a can of Dixon's Pure Flake Graphite in my engine room as a safeguard. I do not consider an engine room complete without it.

"I mix cylinder oil and graphite together for heated bearings and use one teaspoonful of graphite to one-third of a pint of cylinder oil.

"I have a cup above the throttle for feeding dry graphite to the cylinder. The graphite gives the cylinder a polish that cannot be had with cylinder oil alone.

"I think if more of Dixon's Pure Flake Graphite was used there would be less trouble with heated bearings and lighter machine shop bills to pay for reboring cylinders and valve seats.

"I always use graphite with oil in making pipe connections in the Talc Mines, as it keeps the joints from rusting."

THE demand for pens and pencils continues large, in spite of the fact that the typewriting machine has come into universal use. Statistics show that one gold pen, ten steel pens and fifteen lead pencils are made a year for every family of five persons.

### **QUITE AMUSING.**

To-day the culmination of correspondence came as follows:

"The customer bought six No. 50 and three No. 80 crucibles, Dixon's make. He found them specially good, but there were three crucibles that only did one-tenth of usual service, and jumping to the conclusion that they were also Dixon's, he asked for a rebate. A salesman called and found the nine Dixon pots AA1 as he reported, and the three that had failed badly were from a previous purchase from another manufacturer of crucibles. It usually is this way."—J. A. WALKER.

### **GRAPHITE FOR FACTORY ENGINES.**

"WENATCHEE, Wash., Nov. 2, 1902.

"JOSEPH DIXON CRUCIBLE COMPANY,

"Jersey City, N. J.

"Gentlemen:—

"Your samples received a few days ago and I have given them a thorough test in several ways and have found them to be highly satisfactory and all that is claimed for them. My piston packing began to blow and I applied some of

the No. 2 Graphite mixed with cylinder oil, and it stopped the blow within an hour. I also use this mixture for the valve, introducing it through a hole in the steam pipe just above the valve and my engine runs fine. We also tried it in the boxings, which run hot on the rolls and it helped them at once, and now they are running cool enough by using your graphite. I don't see how we could get along without it, now that we have learned the value of Dixon's Pure Flake Graphite.

"Thanking you for the favor, I am,

"Yours respectfully,

"J. R. MORR,

"Engr. Wenatchee Milling Co.

"P. S.—The little pamphlet is full of practical information."

### **SUCCESS.**

Young Rockefeller teaches a bible class, and every Sunday his talkee-talkie is some variation of what he calls success. In this line we hear of trusts, stock watering, union men, non-union men, etc., etc., and more, too, for that matter, but the following letter received by us points to a promise of success which is success:

"Mr. ——— was formerly with ——— and is now a special student in metallurgy in Columbia University; is an experienced foundry foreman who feels the need of more technical information, and voluntarily gave up his job to get it at the University. We know the young fellow's name and address; if he proves a failure we will let you know."—J. A. WALKER.

### **DIXON'S LINOTYPE GRAPHITE.**

"We have been using Dixon's Linotype Graphite on our spacebands and other parts of machines, and would ask for nothing better. I had a set of matrices that showed "burrs" very badly, and in three days the "burrs" disappeared. Dixon's No. 635 Oiled Graphite for spacebands is just as good as any of the so-called "Burless" at \$2.00 a pound, and "Buriene" at \$10.00 a box. It is evident that Dixon's is the best graphite for linotypes on the market.

"JOHN A. PIKE, Machinist,

"The Post-Express Printing Company,

"Rochester, N. Y."

### **THE LAW OF PAY.**

No one is paid for his work, mental, mechanical or manual; nor is anyone entitled to be paid by the measure of the work which he does in homes of labor, or in the intensity of the physical effort, or by the quantity or kind of the work done.

He is paid by the measure—consciously or unconsciously—estimate of the work or the effort which he saves to the man by whom he is paid.—E. Atkinson in *Atlantic Monthly*.

### **A TRUE TALE.**

In one of our down-town offices is employed a charming young woman whose pencils are always in an exceptional well-sharpened condition. Noticing this, a visitor asked: "Who sharpens your pencils for you?" "Nobody—do it myself," answered the young lady with great decision.



The visitor arched his eye-brows and looked as incredulous as he knew how. "If you don't believe it I'll sharpen yours for you," said the young lady in a tone of defiance. The visitor produced a somewhat battered-looking stub of a pencil. She took it in her left hand, with the point aimed at the ceiling, and then, from some mysterious place in her desk produced one of the most formidable carpenter's chisels which it had been the lot of the visitor to meet. It must have been at least sixteen inches long, and the blade could not have been less than an inch and a quarter wide. Without the least hesitation she applied the chisel to the pencil and began shaving off slices of wood around the point. Before the visitor had regained control of his organs of speech, she handed the pencil back to him, sharpened better than he could have done it himself. "Are we, or are we not, fit to vote?" asked the young lady, archly. "Vote!" cried the astonished visitor, "why, you are fit to run a ward primary." And the young lady put her chisel away and smiled with a superior air.—*N. Y. Tribune.*

### THE FUTURE.

The *Iron Trade Review* of Cleveland, Ohio, asked our opinion of the prospects for 1903, which we gave and herewith reprint in GRAPHITE. Their questions were:

1. What are the prospects for 1903 in your business, and on what are these based?
2. Are further extensions planned in your own business or in lines that buy from you?
3. Is an increase in your foreign trade to be expected, and are any steps desirable for the enlargement of foreign business?
4. Have you any suggestions for the continuance or improvement of present industrial conditions, and are there any untoward symptoms?

We replied as follows:

#### LET WELL ENOUGH ALONE.

The consumer, which means everyone, is everywhere prosperous. The wage earner is receiving large and larger wages. The farmer is rich from abundant crops and famous prices, and this, plus the fact that the American people are good spenders, seems to warrant good prospects for 1903 at least. The Dixon company accomplished additions of large new buildings in 1902 and has more to do in that way yet. Our aim is an up-to-date plant. Of course, increase in foreign lines is to be expected. Read Brooks Adams' recent book on the "American Economic Ascendancy" for convincing reasons too numerous to recapitulate here.

Suggestions are legion. In a word, progress, growth and ascendancy like everything else, has its price. It means better goods, lower cost of production, more energy. Pay the price, and the result is yours. The chief economic menace of the United States today is our imperfect inelastic currency. For government policy, we should say, let the tariff alone, and also let the so-called trusts alone. These latter big business combinations are the result of a law whose working is as inevitable as the law of gravitation. Furthermore, they are our greatest pride and have given us more renown the world over, in the last five years, than we obtained before in any 50 years.—J. A. WALKER.

### YOUNG MAN'S CHANCES TO-DAY.

A young man of capacity, industry and integrity has a field for individual effort such as has never before existed in this country, says Edward Bok. And success is neither harder nor easier than it ever was. Success never yet came to the laggard, and it never will. His success depends upon himself. No times, no conditions, no combinations of capital can stop a young man who has a determination to honorably succeed, and who is willing to work according to the very utmost of his capacity and sinews of strength. The real trouble is that the average young man won't work. He has gotten the insane notion into his head that success comes by luck; that men are made by opportunities which either come to them or are thrust upon them. And he waits for luck or a chance to come along and find him. Instead of taking a sane view of conditions and seeing with a clear mind that as trade widens opportunities increase, he takes the mistaken view that the rich are getting richer and the poor poorer. These are the conditions of mind and life which are keeping thousands of young men down, and will keep them down. The times are all right. It is the young man who finds fault with them who is not.

### ADVANTAGES OF BEING A DOG.

On the outskirts of St. Paul many years ago an old German kept a tavern. Occasionally he imbibed a little too much, and at such times he used to direct his conversation to the dog who was his most intimate friend. One day he was heard to remark:

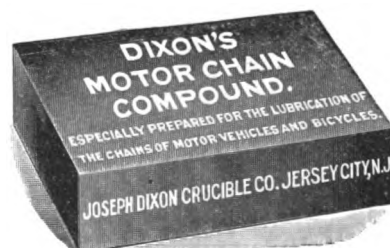
"Vy dond you did someding, Snyder? I must all de time vork. If I tend de bar not, you haf somedings to eat, no. In de winter dime you lay mit de stove py, und I haf to vork. Und in de summer dime you lay by de voodpile und listen to de sunshine, while I haf to vork. All de dime I haf to vork. Und you are nodding but a dog und when you die you is det, but when I die I haf to go to hell already yet."—*Popular Mechanics.*

### DIXON'S GRAPHITE MOTOR CHAIN COMPOUND.

**Especially Prepared for the Preservation and Lubrication of the Chains of Automobiles.**

The care of driving chains is a matter of the utmost importance to those who would secure the highest degree of efficiency for their machines, either man or motor driven.

The chain is the connecting link between power developed and work done, and high efficiency of the other



parts of the machine counts for nothing when the chain ceases to perform its functions properly.

The severe strains to which the chain is subjected under conditions of constant exposure to dust and dirt, renders the matter of its proper lubrication quite a difficult one.

Each particular link requires as much consideration as the chain as a whole, because "the whole is no stronger than the weakest part."

The Dixon's Cycle Chain Graphites which have been on the market for years, have given unusual satisfaction for the uses for which they are intended, that is, the exterior lubrication of chains. But the heavy chains of the automobile need something more than this outward application. They need a treatment which will go to the very innermost wearing surfaces of the pivots.

This treatment is supplied by the use of Dixon's Motor Chain Compound, an article which we know will give excellent satisfaction. It is composed of a mixture of Dixon's No. 635 Special Lubricating Graphite, with mineral and animal lubricating materials, and made into hard oblong cakes weighing about three pounds.

An excellent idea of the character of this compound may be gained by reading the directions which accompany each package, and which are here given:

First thoroughly clean the chain by repeated immersion in naphtha or benzine. When dry place in a flat pan large enough to receive the chain when coiled up somewhat loosely, and then melt in the pan enough of the motor chain compound to entirely cover the chain. The temperature of the melted compound should be at least 180 degrees, to insure sufficient fluidity, so that it will reach the interior wearing surfaces of the chain. The chain should be moved about as much as possible to aid the composition in reaching the farthest crevices. Removing the chain, allowing it to cool and again immersing in the compound, will aid materially in bringing about this result. When finally removed, the surplus compound is wiped off and the chain allowed to become cold. Never use the chain before perfectly cold, as the material would then be forced out of the joints. This treatment will surround each pivot with a bushing of excellent lubricating quality, hard and durable.

### STEEL STRUCTURES.

**Notable Buildings Protected From Corrosion by Dixon's Silica-Graphite Paint.**

The enormous buildings of structural steel which have recently been erected in New York City, as well as those now in process of construction, have attracted considerable attention. Souvenir pictures of these magnificent office buildings and hotels have caused people in all parts of the globe to wonder at the march of progress in the new world.

An element of vital importance in the lasting capacity of the modern high building is the durability of its structural steel and iron. Realizing this fact, architects are laying much stress on the necessity of the selection and specification of a paint that will prove a durable protective coating.

As the modern steel building frame commonly carries the entire load sustained by the structure, together with its own weight, any active influence which tends to impair the durability of the metal weakens the resistance of the building itself and serious consequences are likely to follow.

Although the army of paint salesmen is large, competition keen and time precious, well worded, candid and con-

cise statements as to the merits of a protective coating will usually appeal to the good judgment of the architects and engineers under whose supervision the buildings are planned and erected.

The following enumeration of some of the steel and iron structures in Greater New York which have been or are being painted with Dixon's Silica-Graphite Paint, forcibly marks the continuous and well-merited success of this product:

Butterick Building, Broad-Exchange Building, largest office building in the world; American Exchange National Bank Building, Atlantic Mutual Insurance Building, New Mutual Life Insurance Buildings, Hanover Insurance Company Building, Broadway-Chambers Office Building, Boudoine Building, Office Building 68 William street, The Wyllys Building, Astor Hotel, Knickerbocker Hotel, New Marie Antoinette Hotel, Algonquin Hotel, Aeolian Building, St. Regis Hotel and Apartments, Childs' 34th Street Building, Apartment House 61st street and Madison avenue, Siegel-Cooper Co.'s Warehouse, Apartment House 81st street and Riverside Drive, Wall-Exchange Building, Office Building 28th street and Broadway, 12½-story Hotel, 77th street, near Columbus avenue; 12-story Office Building Greenwich and Warren streets, Tiffany Mansion 72nd street and Madison avenue, Apartment Hotel 47th street, east of 7th avenue, Store, Loft and Office Building, 27 East 21st street, Government Buildings Navy Yard, Brooklyn; 10-story addition Hotel St. George, Brooklyn; Apartment Hotel Clinton street, Brooklyn; iron shutters of New York Dock Co.'s Warehouses, Brooklyn; Apartment Hotel 94th to 95th street and Broadway, New York City; Public School No. 188, East Houston street, largest public school building in New York.

### A NEW YEAR'S GIFT.

In time with the words she was writing there she hummed  
an old love song,  
Her curly hair half hid the eyes that followed the lines  
along.  
A glance at a hand where a ring shone bright, and a girl-  
ish face so pleased,  
Made me think of some happy man's delight when that  
white note was received.  
But alas! the man who received the note was rather sad I  
fear—  
'Twas a lengthy bill from a dry goods store where she was  
the sweet cashier.  
—H. A. N.

### DIXON'S CRUCIBLE CLAY AND GRAPHITE MIXTURE.

This, as its name implies, is a mixture of graphite and crucible clay. The clay being sticky, gives strength to the mixture and the graphite enables it to withstand the highest degree of heat.

Brass founders use it to patch up worn out furnace linings. It is also used when making new linings in place of fire-clay, as it gives much better satisfaction. It successfully withstands the highest heat and wear and tear, and will save furnace linings and postpone the day of buying new and expensive firebricks, and by its durability makes unnecessary frequent repairs.

Iron founders use this material for lining up ladles and find it very useful for mixing with ordinary clay as a tap-hole mixture.

Engineers for both stationary and locomotive boilers find this material useful for patching up fire-boxes. Five cents' worth of this mixture will save a dollar's worth of fire-brick. It is also valuable to them as a mortar when used in laying fire-brick.

Gas companies use it as a cement on covers of retorts and also as a more refractory mixture around the retort itself.

The only directions necessary to observe are to mix the material with water, and where rapid drying is required it is usual to put in one-tenth part of molasses.

#### DIXON'S STOVE CEMENT.



A broken stove or range lining is a vexation familiar to every housekeeper. Such a break is a source of continued annoyance and danger. The clinkers form and hold in the crack, and the iron, not fully protected, is liable to overheat and warp or crack.

Dixon's Stove Cement makes a broken stove or range lining good as new. It is in the form of a dry, coarse powder, and the simple addition of a little water makes it ready for use. It requires but little time to dry, and can be fired very quickly after using.

It is packed in 2½ pound packages, three dozen packages in a case;—6 and 10 pound packages, one dozen packages in a case.

#### LOOK OUT!

If the word charity covers a multitude of sins, so does the word graphite.

Some fellow has said, "All whiskey is good, but some is better than others."

This is not true of graphite. If graphite intended for lubricating purposes is not of the very best, it isn't fit to use.

Don't use any graphite for lubricating until you have compared it with a sample received from the Dixon Company, or put up in the original packages.

Don't judge the value of graphite as a lubricant until you have tried Dixon's Pure Flake Graphite. If you are not familiar with it, send for sample. It will please you.

#### USES OF GRAPHITE.

From earlier and rather limited uses of graphite in lubrication, the field has gradually widened to include its use with lighter oils, with water and, in some cases, unmixed with other materials.

In the cylinders of steam engines, for example, Dixon's Pure Flake Graphite serves an admirable purpose, and engines which previously required large quantities of cylinder oil are now reported as giving far more satisfactory results by the entire omission of the oil, and the use of graphite alone.

In all classes of service for which Dixon's Flake Graphite has ever been successfully employed, there are many evi-

dences to show that it is no longer being regarded merely as material for an emergency, but that it now has a place in the ordinary and usual routine of the day.

#### IT IS SIGNIFICANT.

It is significant that the increasing use of pure flake graphite as a lubricant is the result of demands originating in the machine shop and engine room. It has come because men charged with the responsibility of keeping machinery moving have found it beneficial in their work. Its use is not the result of pressure or argument. It is the result of actual tests and careful demonstrations.



It must be observed that for satisfactory results in lubrication, the graphite employed must be free from grit and other impurities, and it must be properly graded for the work it is designed to accomplish, and the purchaser should have assurances that material of a uniform quality can at all times be supplied.

It is not to be presumed that because a material is sold as graphite, it will for this reason alone give good results in lubrication. Always compare any graphite offered with Dixon's Pure Flake. Dixon's can safely be considered as the standard. Samples free.

#### GRAPHITE COMMUTATOR BRUSHES.

We read in *The Tradesman* that all generators made up to five or six years ago were provided with copper brushes. As the size of generators increased and it became necessary to introduce solid armatures, it was found that the copper brushes had such a low contact resistance that it was practically impossible to so design the machines that they would not spark on wide variations of load. Experiments were then made with a view of obtaining a material that would have a greater resistance, and, after many trials, carbon with a small admixture of graphite was adopted and is now used very universally. By virtue of its high internal resistance, the carbon brush cuts down the current in a short-circuit coil to a low value, and in consequence gives sparkless commutation. Machines of a size and voltage which would have been prohibited if copper brushes were used can now be built with absolute certainty.

Because of the very much greater smoothness of graphite, graphite brushes are now quite rapidly taking the place of the hitherto favored carbon brushes. Dixon's Graphite Brushes have been pronounced superior to anything in the way of graphite brushes that have heretofore been made.

### CHECKING UP THE HOLIDAYS.

The boys in the Dixon office are hard workers and naturally take an interest in holidays. They feel that the 1903 calendar was not made up specially for their benefit. Washington's birthday comes on Sunday, instead of on a Saturday or a Monday. Then the Fourth comes on a Saturday and, as the Dixon office closes at noon on all Saturdays in June, July and August, they feel that it would have been decidedly better on some other day. The only comfort is that Decoration Day also comes on Saturday, and that means two days holiday. Like the hopeful crowd that they are, they look forward to 1904 when Washington's birthday is on Monday, Decoration Day on Monday, Fourth of July on Monday and Christmas on Sunday, to be held on Monday. There may be blue Mondays for Dixon but not for the Dixon boys.

### DIFFERENT CIVILIZATIONS.

At Caracas the powers that be and the rebels are breaking each others' heads, and what heads are left, England and Germany take a whack at. At Morocco a scrimmage of the same kind goes on; the Sultan is pulled off his throne by his brother and the next day he is back again.

In the United States, however, Senator Hoar is soon to introduce a law that you shall not even look crossways at your business competitor, much less pull the ruler off his official chair.—JOHN A. WALKER.

### FUNNY.

Senator Hoar's new bill that you must not undersell your competitor, reads a little like making it against the law for water to run down hill and reminds one of Thaddeus Stevens' old-time bill during the War of the Rebellion, forbidding gold to go above par.

There are some things that laws can't touch.

—JOHN A. WALKER.

### DIXON "HOLLERS."

"The man who has a thing to sell  
And goes and whispers it down a well,  
Is not so likely to collar the dollars  
As he who climbs a tree and hollers!"

### POLISHING STEAM CYLINDERS WITH GRAPHITE.

The manufacturers of steam engines are finding that it is a most desirable process to polish the inner surfaces of steam cylinders with graphite when they are new and before they are put into use.

It is the practice of some to use the graphite on the surfaces without warming the cylinders. It is the practice of others to heat the surfaces where they are not too large and rub the graphite into the hot metal. We presume that the heating of the metal opens the pores. We only know that where the graphite is rubbed into the heated surfaces the results seem to be more satisfactory and more lasting than where the graphite is used on cold surfaces.

The graphite used is Dixon's No. 2 Flake Graphite or Dixon's Special Graphite No. 635, which is even more finely pulverized than No. 2 Flake.

## Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, type-writer work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing.**

**Dixon's Plumbago for Powder Glazing.**

**Dixon's Plumbago Foundry Facings.**

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite.**

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Cycle Chain Graphites**, for perfectly lubricating chains and gears of bicycles.

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Anti-Flux Brazing Graphite**, to prevent the spelter from adhering when brazing.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians.**

Special circulars with detailed information sent on request.

# Graphite

VOL. V.

MARCH 1903.

No. 4.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

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## DEMAND FOR MEN OF ABILITY.

The demand "for men at the top," says Mr. T. B. Moxon, is greater than ever before, notwithstanding the competition we hear so much about. Indeed, the actual effect of that competition is that men of real ability are more and more sought after and better paid, whilst the lazy and inefficient are less tolerated than ever.

The qualifications which contribute to make a successful man are downright earnestness first and courtesy next.

Thoroughness is one of the most difficult qualities for a young man to acquire. There are no unimportant trifles in business; a wrong figure, a badly copied letter, a misdirected envelope, may involve and have involved serious loss.

The young man who means to succeed will take trouble to acquire information, and what he patiently learns he does not soon forget. He should also learn to keep his mouth shut about the affairs of the business. An employe is a confidential servant, and has no right to talk about his firm's affairs to outsiders. Remarks that the clerk may imagine quite innocent, often contain most important information.

A clerk's writing should be clear, plain, without flourishes, in the ordinary sloping hand. He should be able to copy accurately and quickly, and to spell all ordinary words correctly, to address an envelope, to set out a letter and to compose one. Shorthand and typewriting are advantages, but the person must guard against being mechanical in his work or his future will be ruined.

A sound knowledge of arithmetic, algebra, and Euclid, is well worth attaining by anyone who wishes to rise.

—Chat.

## HEATING IN RED HOT LEAD FOR HARDENING.

Mr. E. R. Markham in the *American Machinist* says concerning "Heating in Red Hot Lead for Hardening Purposes" that, for certain classes of work, it is a speedy and very reliable means to use, as the heat is so uniform and can be applied so safely. There is no danger of burning the outside of the article before the center is heated. Large and small parts are heated alike, and quite

a number of pieces can be heated at the same time, thus making it quite a cheap, speedy, yet reliable way of heating.

The most satisfactory crucible to use is a graphite crucible, made especially for this purpose. A cast iron pot can be used, but as a rule it is not as satisfactory and is more costly, as it burns out very quickly. The graphite crucible should be annealed before using, as this toughens it, reduces the liability of cracking and makes it longer lived. To anneal the crucible, place it in an oven or furnace, heat it to a red, take it out and allow it to cool off slowly.

A very important item to be considered is the quality of the lead. Red-hot steel is very susceptible to the action of certain impurities. Many brands of lead contain sulphur in such quantities that it is very injurious to the steel. Nothing but *chemically pure* lead should be used. It is the custom in some shops to use scrap-lead of any kind, and when unsatisfactory results are obtained, the *method* instead of the material is condemned. If the lead contains sulphur, even in small quantities, it will ruin the steel. The article will have a honeycombed appearance and portions of the outside stock will be eaten away. When using lead that is chemically pure, this difficulty will not be encountered.

To prevent lead from sticking to the work, many compounds are used. Mr. Markham has had excellent results with a solution of cyanide of potash and water. Dissolve one pound of powdered cyanide in one gallon of boiling water; let it cool before using. Some use a strong solution of salt and water. Dip the articles in the solution, place them where they can dry, preferably in a hot place, as they dry more rapidly. It is not safe to put them in the lead when damp, as any moisture would cause the lead to fly.

The Dixon Company manufacture what are known as file tempering pots, which have been used for many years for tempering files by the red hot lead process.

## "GRAPHITE"—THE DIXON PUBLICATION.

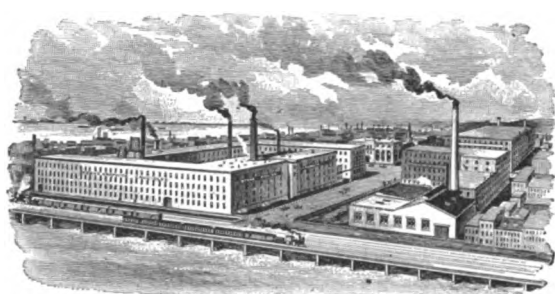
That GRAPHITE is appreciated by public libraries is evident from the fact that we have received acknowledgements from the directors of several public libraries, in which they say that they have been instructed by the trustees to acknowledge with thanks the receipt of GRAPHITE for the year 1902.

We shall continue as heretofore in the endeavor to make GRAPHITE worthy of careful reading and preservation.

ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

### SALESROOMS AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Morigen (Switzerland), Finland.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., March 1903.

### EXPERIMENT BY PROF. GOSS, PURDUE UNIVERSITY,

To Determine the Lubricating Value of Graphite when Combined Mechanically with the Brass of a Journal Box.

It has been suggested that if flake graphite could be distributed uniformly throughout the substance of a journal metal, the result would be self-lubricating or an anti-friction metal. The difficulties in securing such a composition are very great, but an attempt to approximate the desired conditions resulted in an experiment which may be described as follows:

A special set of brasses were made for the crank-pin of the connecting rod of a 7 x 10 slide valve (Atlas) engine, the crank-pin of which is 1-5/8 inches in diameter and 2 inches long. In casting these brasses, core of the mold was thickly set with short lengths of "sketching leads," these being the softest lead pencils manufactured by the Joseph Dixon Crucible Company. The lengths of lead extended out into the mold in such a way as to become imbedded in the metal of the castings, the interior surfaces of which exposed the ends of the imbedded pieces. The brasses were bored to fit the crank-pin in the usual way, a little less than 1/19 of the bearing surface being supplied by the leads. The brasses were not otherwise prepared.

Before applying the brasses, care was taken to remove every trace of oil from the pin and the surrounding parts, so that there would be no lubrication excepting that supplied by the sketching leads. When all was ready, the engine was started at a speed of 50 revolutions a minute. The steam distribution was such as to give a total piston press-

ure of about 800 pounds and a development of about 2 horse power. The engine started with a loud squeak which continued throughout the time it was running, and the temperature of the brass increased rapidly. After 15 minutes running, the brass was judged to be hot enough to draw the color on the pin and the engine was stopped. An examination showed that particles of the sketching leads and of finely divided brass were all about, that the leads had by crumbling in the brass, wasted away for quite a little distance back from the bearing surface, but that there was no cutting of the crank-pin.

The experiment was necessarily very crude. The sketching leads are not entirely of graphite, but of a mixture of graphite and very fine clay, burned to form a brick-like structure. Evidently, such material could not have the lubricating qualities of pure graphite. Moreover, the intermixing of the leads with the material of the brass was not uniformly distributed, and the adhesion between the two was unsatisfactory. In view of these facts, the experiment was perhaps as successful as could have been expected.

After cooling, pure flake graphite (No. 635) was brushed on the crank-pin and brass, the rod was set up, and the engine started as before, dry graphite being continually delivered into the joint between the two halves of the brasses, from an ordinary brass hand oiler. In this manner the engine was run under a load which was somewhat lighter than that previously employed for a period of fifty minutes, with manifestations similar to those previously obtained. Upon examining the bearing after the run, it was found to be worn to a good bearing on the pin, that the vibration had displaced much of the pencil lead, and that the holes in the casting which had been occupied by the leads were loosely filled with flake graphite and brass cuttings.

No further experimenting was attempted with these brasses.

In all of these experiments no grease or oil was used, all lubrication being supplied by the graphite.

The interesting fact to be noted from these experiments is, that notwithstanding the vibrations which stimulated the squeak, the high temperature to which the brass was allowed to go, and the presence of cut brass between the rubbing surfaces, the lubricating qualities both of the graphite alone, and of a mixture of graphite and baked clay, were entirely sufficient to prevent the least scratch or damage to the crank-pin.

### WONDERS OF SPACE.

Light speeds onward with a velocity of over 180,000 miles a second, and takes more than four years to come from the nearest star. Even to come from the sun requires about 500 seconds of time.

The stars are so distant that a line 93 millions of miles in length would look to the inhabitants of the *nearest star* as a line about two-tenths of an inch long would appear to you when placed a mile away.

"BE GOOD that you may be well; be well that you may be good."—*Phillips Brooks*.



# STEEL STRUCTURES.



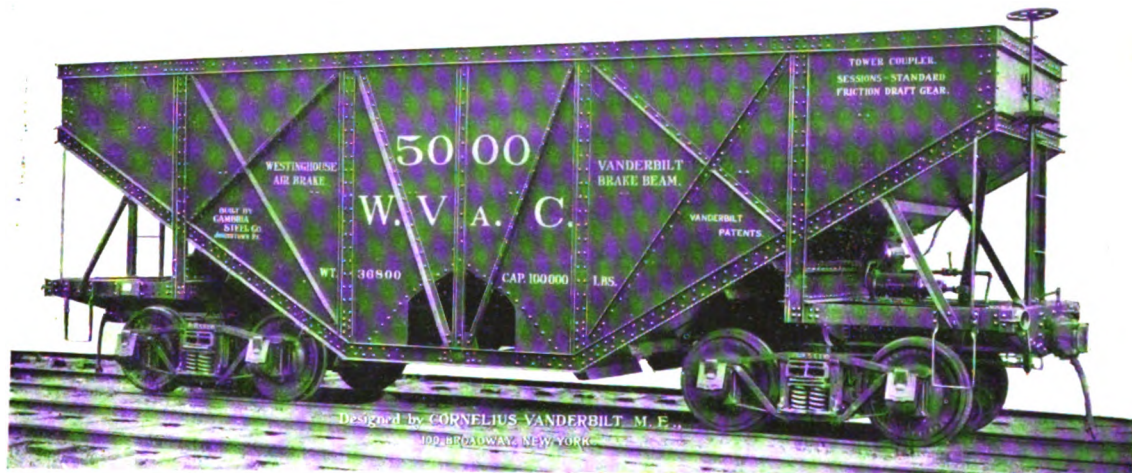
WILLIS AVENUE BRIDGE, CROSSING HARLEM RIVER AND N. Y., N. H. & H. R. R. FREIGHT YARDS, NEW YORK CITY.

The railroads of the United States may be said to be the greatest consumers of steel. Bridges, viaducts, buildings and cars, formerly constructed of stone and wood, are now made entirely of steel.

The attention of the entire railroad world is frequently directed to the American engineers' originality in the design and construction of enormous steel structures to meet the shipping and travelling requirements of the new world.

The complete success of steel as a building material depends almost entirely on the kind of protective paint that is used in its construction and maintenance. Realizing this fact, engineers are now giving special attention to

the selection and proper use of a paint that will prolong the life of the steel structure. It has been stated that if it is renewed often enough, any paint will preserve metal work forever, but it has required some years to demonstrate the paint that would make the necessity for renewal less frequent. The Joseph Dixon Crucible Company were the first to introduce graphite paint for the preservation of steel, and special attention has been given to securing information as to the protective and wearing qualities of Dixon's Silica-Graphite Paint. Interesting records as to the service rendered by this paint, with illustrations of notable structures upon which it has been used, will be furnished upon request.



The hundred thousand pound steel car of the W. Va. C., is the design of Mr. Cornelius Vanderbilt, M. E., whose practical knowledge of modern railroad conditions is shown in the construction of this car.

Although the steel car industry is still in its infancy, the use of steel cars on various railroads of the country has demonstrated the fact that a good protective paint is necessary for their preservation.

The rust-forming action of coal acid, rain, heat and cold, and wind-driven dust and cinders may be said to make the corrosive conditions more severe in this than any other

type of steel construction.

The excellent protective and wearing qualities of Dixon's Silica-Graphite Paint in its use on hundreds of railroad structures, has recommended it to steel car users for construction and maintenance painting of all parts of the steel car and truck.

The large spreading and covering power of Dixon's Silica-Graphite Paint, generally estimated at 500 to 600 square feet to the gallon, makes it an economical paint for priming and finishing coats. Its durability saves the cost of labor and material in frequent re-painting.

# A TOOT FOR DIXON'S GRAPHITES

## FOR AUTOMOBILES

The proposition of reducing friction to the minimum is no new problem to the general mechanical and scientific world. The automobile of various types presents no new or radical form so far as lubrication is concerned. Every form of friction and bearing in the automobile is known and has been gone over.

Whatever supremacy Dixon's Graphite has attained in other branches of mechanics holds true with respect to the automobile, the use of Dixon's Graphite being the adaptation of a long since established precedent in other branches of a similar field.

While the automobile, at the present stage of the industry at least, is principally a means of pleasure, it as a whole must be treated as a piece of machinery. The aim of every manufacturer and individual is to attain all the power possible with the expenditure of the least energy. To accomplish this, the running parts must not alone run properly; they must run smoothly and with the least amount of friction.

The use of Dixon's Graphite in its various forms provides the most economical and successful operation so far as lubricating is concerned.

It is not our purpose to enter upon an educational discourse as to the value of Dixon's Graphite, but to confine our effort in the direction of suggesting the most efficient methods of its application, as shown through test and use by automobilists, and experiments by experts identified with the development of the motor car.

While the art has not exactly reached that condition where cost of lubrication has entered to any great extent, our effort is more to carry the theme of efficacy and necessity rather than cost, which in the case of graphite lubrication is immeasurably less than by any form of oil.

The feature of cleanliness and waste through leakage is a forceful argument for the use of graphite wherever possible.

### DIXON'S No. 635 GRAPHITE.

Dixon's No. 635 Graphite is a finely pulverized pure flake graphite, put up in one-half pound and larger packages in dry form, and can be readily applied by means of an ordinary squirt can.

Dixon's Graphite in this form is unequaled for valves, valve slides, clutches, clutch-leathers, brakes, brake-bands, or, as a matter of fact, any exposed bearing. In emergency cases for cooling a hot bearing or stopping a squeak or squeal it has no equal.

In cars where forced lubrication is in use, a small quantity of No. 635 Graphite placed in the oil reservoir from time to time will, after the course of its travel through the oil feed-pipes, find a place in some bearing. There need be no hesitancy in using No. 635 in this way, as it will not clog a feed-pipe, and by placing it in the oil tank its dis-

tribution throughout the lubricating system is assured.

Where splash lubrication is in use, where the supply of oil does not come from an oil pump, a small quantity of Dixon's No. 635 Graphite deposited in the oil in the crank-case will find its way to the crank bearings, crank-pin bearings, connecting-rod bearings, wrist-pin and bearings, as well as the piston, piston rings and cylinder.

As a lubricant for gears, shaft bearings, gear shifters, shafts, universal joints, bevel gears, balance gears and other working parts, Dixon's No. 635 Graphite mixed with oil or grease adds to the life of the wearing parts and reduces friction.

### DIXON'S MOTOR CHAIN COMPOUND.

At the suggestion of many automobilists who realize the necessity of proper lubrication for motor chains, we have carefully investigated the requirements, and after a thorough test have placed on the market Dixon's Motor Chain Compound.

The chain is the connecting link between power developed and work done, and high efficiency of the other parts of the machine counts for nothing when the chain ceases to perform its functions properly.

The severe strains to which the chain is subjected under conditions of constant exposure to dust and dirt render the matter of its proper lubrication quite a difficult one. Each particular link requires as much consideration as the chain as a whole, because "the whole is no stronger than the weakest part."

The Dixon's Cycle Chain Graphites, which have been on the market for years, have given unusual satisfaction for the uses for which they are intended—that is, the exterior lubrication of chains. But the heavy chains of the automobile need something more than this outward application. They need a treatment which will go to the very innermost wearing surfaces of the pivots.

This treatment is supplied by the use of Dixon's Motor Chain Compound, an article which we know will give most excellent satisfaction. It is composed of a mixture of Dixon's No. 635 Special Lubricating Graphite with mineral and animal lubricating materials, and made into hard oblong cakes weighing about three pounds.

An excellent idea of the character of this compound may be gained by reading the directions which accompany each package, and which are here given:

### DIRECTIONS.

First thoroughly clean the chain by repeated immersion in naphtha or benzine. When dry, place in a flat pan large enough to receive the chain when coiled up somewhat loosely, and then melt in the pan enough of the Motor Chain Compound to entirely cover the chain. The temperature of the melted compound should be at least 180





degrees, to insure sufficient fluidity, so that it will reach the interior wearing surfaces of the chain. The chain should be moved about as much as possible to aid the composition in reaching the farthest crevices. Removing the chain, allowing it to cool, and again immersing in the compound will aid materially in bringing about this result. When finally removed, the surplus compound is wiped off and the chain allowed to become cold. Never use the chain before perfectly cold, as the material would then be forced out of the joints. This treatment will surround each pivot with a bushing of excellent lubricating quality, hard and durable.

#### DIXON'S GRAPHITE GREASES.

Dixon's Graphite Cup Greases possess the merit of having all the good lubricating qualities of the best mineral oils, and at the same time, being in solid form, are simple and economical in application. The objection usually urged against greases that they have to be reduced to the fluid condition before being effective, hardly applies to these greases, as being composed almost entirely of mineral oils, they reach that condition the moment they touch a journal.



A value of extreme interest to the automobilist in the cup greases is a characteristic peculiar to them. They retain their ordinary consistency through a large range of temperature, there being but a slight variation of consistency under all conditions which present themselves to the automobile.

#### GRAPHITOLEO.

Dixon's Graphitoleo is a preparation of very finely pulverized and very choice graphite (Dixon's No. 635 Graphite) and a pure vaseline. It can be mixed with oil for cylinders and used in all emergency cases on the road. Being packed in eight-ounce collapsible tubes, it may be conveniently carried and should find a place in the locker or tool kit of every automobile.

#### DIXON'S PIPE JOINT COMPOUND.

Unless threaded joints are properly made, they do not "make up" and are sure to leak. In water and steam joint leakage is annoying and wasteful. In gasoline joint leakage is positively dangerous.

By the use of the Pipe Joint Compound the joints "make up" absolutely tight with greater ease and may be "broken" without difficulty or damage to the pipe. It is vastly superior to red lead in every way.

We are always glad to send samples free.

#### IN CONCLUSION.

All the graphite productions described above can usually be obtained from the leading supply houses and hardware houses. If, however, you do not readily find them on sale, please write for prices or for any further particulars.



#### TESTIMONIALS.

Florence, Mass.

I consider I have given the automobile graphites a thorough test. It gives me pleasure to say that I found the

graphites to be all you claim for them, and I shall certainly continue to use them in my automobile.

The No. 635 Graphite I use in the cylinder cup directly with cylinder oil, and I also mix it with engine oil in the oil-can for use on all the bearings.

Upon the first application I immediately noticed a great reduction in the noise, and I am convinced that my engine never ran so smoothly or was so well lubricated as at present.

I have had occasion to use the Pipe Joint Compound quite extensively, and find that I can make joints absolutely tight with greater ease than ever before. I find it very beneficial put on the threads and faces of unions, allowing them to be made up much tighter than when dry, and they do not stick so badly when it is necessary to break the joint.

Brockton, Mass.

Dixon's No. 635 Graphite is all you claim for it, and possibly a little more, especially on gasoline engines. I shall always keep a supply on hand.

Clinton, Iowa.

The samples of graphite which you sent me worked fine. After this I will not be without graphite.

Chicago, Ill.

I used your Graphite on my "Winton" automobile chain and on the axles, and I used the No. 635 Graphite in the cylinder, mixed with my cylinder oil.

I afterward purchased a two-pound can of "Graphitoleo" from George B. Carpenter & Company of Chicago, and, I should say, used about a half-pound of it on my chain and for all axles, something over a month ago, and have had no occasion to use it since. I suppose it is working all right—at least, the chain looks well, and I consider it very good because it does not daub up the wheels the way most any kind of lubricating oil will do.

Chicago, Ill.

I have used Dixon's "Graphitoleo" on a steam carriage which I used for advertising Bromo Seltzer, and I find that where I have used it the machine runs easily and is a saver of oil. I also mixed Dixon's No. 635 Graphite with engine oil.

In regard to these two articles will state that I intend to use them as long as I have an automobile, and I won't be without them.

Cleveland, Ohio.

We have received your samples of graphite, and are so well pleased with them that we herewith inclose an order for a lot of your goods.

F. B. STEARNS & COMPANY,  
Gasolene Automobiles.

Indianapolis, Ind.

I have used the sample of "Graphitoleo" on the chair of a Knox machine. I used a small portion of the No. 635 in the cylinder of a stationary gas engine with good results. In a word, graphite does all claimed for it and I shall continue to use it.

**A \$3.00-A-WEEK MAN'S CAPABILITIES.**

*"To the Editor of the Evening World:*

"Employers who want experienced men at office boys' salaries may profit by this. I enclose a letter written by a young man to a Philadelphia merchant who advertised in the *Philadelphia Ledger* for an experienced stenographer and typewriter, at \$3.00 per week. It is no joke, but a fact.

WILLIAM YOUNG.

"B., 203, *Ledger* Office:—

Dear Sir: I beg to offer myself as an applicant for the position advertised in this morning's *Ledger*. I am a young man 37 years of age, having had a business experience of 23 years, being connected with the United States embassy at Madagascar for some time, and feel confident, if you will give me a trial, I can prove my worth to you. I am not only an expert book-keeper, proficient stenographer and typewriter, excellent telegraph operator, and erudite college professor, but have several other accomplishments which might make me more desirable than ordinary mortals. I am an experienced snow-shoveller, a first-class corn-husker and peanut roaster, and have some knowledge of removing superfluous hair, and clipping puppy dogs' tails, and a medal for reciting "Curfew Shall Not Ring To-night." I am a skillful chiropodist and a practical farmer, can cook, take care of horses, crease trousers, open oysters and repair umbrellas, and am also the champion tobacco chewer of Pennsylvania, my spitting record being 39 feet six inches.

"Being possessed of great physical beauty I would not only be useful but ornamental as well, lending to the sacred precincts of your office that delightfully artistic charm that a Satsuma vase or a stuffed billy-goat would. My whiskers being quite luxuriant and extensive, my face could be used as a door-mat, pen-wiper, or feather duster. I can furnish high recommendations from Chauncey M. Depew, Jacob S. Coxey, Kaiser Wilhelm, Capt. Clark, the Prime Minister of Dahomey, the Dog-catcher General of Timbuctoo and the Ahkoond of Swat. As to salary, I would feel that I was robbing the widowed of bread and swiping sponge-cake from the orphaned if I was to take advantage of your munificence by accepting the fabulous sum of \$3.00 per week. I would be entirely willing to give my services for less, and by accepting \$1.37 it would not only give me a clear conscience, but would also give you an opportunity of increasing your donation to the church, pay your butcher's bill, keep up your life insurance, found a Home for fly-paper salesmen, and endow a free bed in the Cat Home. Really, old man, your unheard-of charity borders on the supernatural, and to the ordinary mind appears like reckless extravagance. I can call to see you any night after 11 o'clock, or can be seen any Sunday morning in the choir loft of our church (Broad and Dock sts.), where I am at present employed as first assistant organ blower and understudy of the janitor.

"Hopefully yours,

"SOCRATES McGOO,

"4-11-44 Ramcat Alley.

"P. S.—Now, honestly, what kind of a man do you expect to get for \$3.00 per week? Do you want one made

of tin, or would a nice juicy, newly laid putty gentleman fill the bill?"

**THE SCHOOL TEACHER'S CREED.**

I believe in boys and girls, the men and women of a great to-morrow; that whatsoever the boy soweth the man shall reap.

I believe in the curse of ignorance, in the efficacy of schools, in the dignity of teaching, and in the joy of serving others.

I believe in wisdom as revealed in human lives as well as in the pages of a printed book, in lessons taught, not so much by precept as by example, in ability to work with the hands as well as to think with the head in everything that makes life large and lovely.

I believe in beauty in the schoolroom, in the home, in the daily life and out of doors.

I believe in laughter, in love, in faith, in all distant hopes that lure us on.

I believe that every hour of every day we receive a just reward for all we are and for all we do.

I believe in the present and its opportunities, in the future and its promises, and in the divine joy of living.

—EDWIN OSGOOD GROVER.

**A DIXON PENCIL AS A BELL-TAPPER.**

In a certain play which has been running in one of the New York theatres for some time, there is occasion for a bell to be struck behind the scenes. The sound of the bell, in order to conform to the situation on the stage, should be very deep, rich and sonorous. Many different articles, such as pieces of wood, felt hammers, etc., were tried as tappers, but they did not produce the desired result. At last the stage manager took from his pocket a Dixon pencil with the usual nickel tip and rubber attachment and tried that, and lo! it was the very thing. It produced just that rich tone the author had been striving for, and now one of Dixon's "American Graphite" pencils is always kept in the property room whenever this play is produced.

**GRAPHITE FOR THE UP-TO-DATE ENGINEER.**

It is a matter of common knowledge that the addition of pure flake graphite increases the service which may be obtained from the lubricant, whether oil or grease, and, hence, reduces the total quantity which is required to be used.

The fact, also, that journals thus lubricated run satisfactorily, which, when supplied with other lubricants, at once become hot, is taken as sufficient proof that the lubricating value of the mixture is increased by the presence of Dixon's Flake Graphite.

Again, the value of Dixon's Flake Graphite as a remedy for hot boxes in many different classes of service, has long been recognized. The up-to-date engineer should have at hand for use in an emergency, a supply of Dixon's Pure Flake Graphite.

### A LEAD PENCIL TEST.

*It Indicates Certain Characteristics of the Owner.*

"Judge a man's character by lead pencils?" repeated a drummer in an up-town hotel this morning, "that's a new standard; go on."

"By lead pencils," continued an elderly man, with a benevolent countenance, and evidently a plethoric bank account.

"I am the head of one of the largest retail houses in Chicago," he resumed. "I was formerly manager of the concern and I hired all of its employees. I soon became used to size up men, young and old, for what I say does not apply to women, because they don't carry pencils."

"Human nature, I soon found, runs in regular channels, and the man who catches on to the course of these channels is not going to be so very much fooled by his fellow men, even though the latter may conceal their characteristics artfully or innocently.

"One day while an applicant for a place stood before me I asked him to lend me his pencil. He produced one so neatly sharpened at both ends that I gave him a second glance and saw that his appearance, though his clothing was not new, accorded with the exactness shown in the neat, sharp pencil point. I engaged him, and to-day he is the assistant manager of our store.

"That gave me a new idea. I would ask applicants to lend me a pencil. Men who carried scrappy bits of pencils, dull and unsharpened or bitten off at the ends, as a rule I found to show other external evidences of possessing characteristics which negatived their engagement. I found that men who kept about them well sharpened pencils were, as a rule, good mathematicians, were handy with their pen, wrote a good hand, were neat in their habits and were otherwise superior to the other fellows.

"I won't say that the lead pencil test of a man's nature proves anything definite as regards his honesty, but it will show a good line on his characteristics, and this class of men are usually more honest and certainly more scrupulous and exact than the chaps who carry pencils that can't be used until you go through the tiresome process of getting out your own knife and putting a point yourself upon the lead."—*Washington Evening Star*.

### CARNEGIE'S VIEW OF BUSINESS.

If a young man does not find romance in his business, says Andrew Carnegie, it is not the fault of the business, but the fault of the young man. Business is not all dollars; these are but the shell—the kernel lies within and is to be enjoyed later, as the higher faculties of the business man, so constantly called into play, develop and mature.

The old prejudice against trade has gone even from the strongholds in Europe. This change has come because trade itself has changed. In old days every branch of business was conducted upon the smallest retail scale, and small dealings in small affairs bred small men; besides, every man had to be occupied with the details, and, indeed, each man manufactured or traded for himself. The highest qualities of organization and of enterprise, of broad views and of executive ability, were not brought into play. In

our day business in all branches is conducted upon so gigantic a scale that partners of a huge concern are rulers over a domain. The large employer of labor sometimes has more men in his industrial army than the petty German kings had under their banners.

I can with confidence recommend the business career as one in which there is abundant room for the exercise of man's highest powers, and of every good quality in human nature. I believe the career of the great merchant or banker, or captain of industry, to be favorable to the development of the powers of the mind, and to the ripening of the judgment upon a wide range of general subjects, to freedom from prejudice and the keeping of an open mind. And I do know that permanent success is not obtained except by fair and honorable dealings, by irreproachable habits and correct living, by the display of good sense and rare judgment in all the relations of human life, for credit and confidence fly from the business man foolish in word and deed, irregular in habits, or even suspected of sharp practice. The business career is thus a stern school of all the virtues.

### NEW CENTURY IDEALS.

To weigh the material in the scales of the personnel, and measure life by the standard of love; to prize health as contagious happiness; wealth as potential service; reputation as latent influence; learning for the light it can shed; power for the help it can give; station for the good it can do; to choose in each case what is best on the whole, and accept cheerfully incidental evils involved; to put my whole self into all that I do, and indulge no single desire at the expense of myself as a whole; to crowd out fear by devotion to duty, and see present and future as one; to treat others as I would be treated, and myself as I would my best friend; to lend no oil to the foolish, but let my light shine freely for all; to make no gain by another's loss, and buy no pleasure with another's pain; to harbor no thought of another which I would be unwilling that other should know; to say nothing unkind to amuse myself, and nothing false to please others; to take no pride in weaker men's failings, and bear no malice toward those who do wrong; to pity the selfish no less than the poor, the proud as much as the outcast, and the cruel even more than the oppressed; to worship God in all that is good and true and beautiful; to serve Christ wherever a sad heart can be made happy, or a wrong will set right; and to recognize God's coming kingdom in every institution and person that helps men to love one another.

WILLIAM DE WITT HYDE,  
Bowdoin College, Brunswick, Me.

### HE WANTED A KNIFE—AND GOT IT.

A few days ago a surveyor on a trolley line had occasion to sharpen a lead pencil, when he discovered that he had no knife. He approached a large force of Italian workmen and asked by motions for the loan of a knife. It is said that his hair stood on end when he saw the display of cutlery drawn upon him by the sons of sunny Italy. They were as numerous as the total of workmen, and varied, it is said, in size, from a penknife to a general's sword.

## CHATS WITH OFFICE WORKERS.

BY S. ROLAND HALL.

Feel the responsibility of your position, be continually learning, be wide awake, be ambitious.

Always be at the office on time. Do not stay out beyond your lunch hour. When a delay was unavoidable, explain why.

Do not be afraid of working a little beyond office hours, or of doing a few things that you are not paid for.

Do not use up half your time in the office in reading and writing letters of your own, or in reading papers. If you have the interests of the business at heart you can always find something useful to do. Your employer pays you to work.

When in the private office, or at your employer's desk, see and hear nothing not intended for you. Do not pick up letters or try to see what the balance is on your employer's bank book. Open no letter that you have not permission to open.

Help your employer all you can with suggestions. But do not interrupt him too much. Do some thinking yourself. It will enhance your value if you will make memoranda of matters that an employer wishes to attend to and remind him of them.

Look out for enclosures with letters. Go over envelopes before they are mailed; be sure they are correctly addressed.

Be informed on the rules of postage. It is as great a mistake to waste postage as to put on too little. Pay for all the stamps you use on your personal letters.

Be pleasant in the office, but do not be too hilarious, nor acquire the reputation of office joke-teller. A common fault of young men is that of becoming too familiar with their employers. Be on the safe side.

Do not argue too much with your employer. Even if he is wrong it may be policy to let him have his way and find out afterwards that he was mistaken. Use tact.

Be neat in personal appearance. Keep your desk well arranged. Be economical of office supplies. Everything costs money. Notify the purchaser for the office when the supply of anything is getting low. Do not wait until the last has been used.

Remember that trustworthiness counts for more than ability, and that true manliness and true womanliness are silently admired and appreciated at all times.

Be courteous and obliging to visitors and patrons of the office. He knows nothing about the principles of business who is ill-mannered or surly with people who deal with his firm. Courtesy has made many fortunes. Never in the presence of customers argue angrily with a fellow-worker. Exercise self-control.

Telephone service is expensive. You have no right, unless permission is given, to use the telephone for personal purposes. Do not use it at all unless there is necessity. Your employer's good opinion of you will not be magnified if you talk long and frivolously over the telephone during business hours.

The use of common sense, the exercise of thinking powers, the application of earnestness, strict adherence to duty—these are *requisites* which, in business life, must come before *perquisites*.—*Chat*.

## Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, type-writer work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing**.

**Dixon's Plumbago for Powder Glazing**.

**Dixon's Plumbago Foundry Facings**.

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite**.

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Cycle Chain Graphites**, for perfectly lubricating chains and gears of bicycles.

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Anti-Flux Brazing Graphite**, to prevent the spelter from adhering when brazing.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians**.

Special circulars with detailed information sent on request.

# Graphite

THE NEW  
PUBLIC

VOL. V.

APRIL 1903.

No. 5.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

COPYRIGHTED 1903 BY THE JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.

## SPRING ROOF PAINTING.

The eye is delighted at this season of the year with the new dress of green taken on by the ground and trees. Nature's structures are well cared for in this annual renewal, and every one enjoys the brightness and beauty of the new coverings.

The wear of many summers and winters has dulled and removed the coatings on buildings. A faded paint or a rusty roof is a blot on the landscape and a sign of neglect. The roof is most prominent, most neglected, and most exposed to the destroying elements: the sun's rays, rain, frost and snow.

Metal or shingle roofs can be best preserved and beautified by the selection of a good paint and a good painter, one as important as the other.

The painting estimate should contain the following features: Scrapers and wire brushes to be used in thoroughly removing all blistered, cracked and loose paint, rust and foreign deposits. Broken seams and holes should be properly soldered. Roof to be perfectly dry when painting is being done. Positively no work to be done until the dew is off the roof. Two coats of Dixon's Silica-Graphite Paint to be applied. First coat Dixon's Dark Red; second coat Dixon's Natural. The paint to be delivered to building in original packages as manufactured by the Joseph Dixon Crucible Co.

No thinners or adulterating oils are to be used. The paint should be evenly applied, and not stretched out. The first coat should be allowed to dry for ten days to two weeks before second coat is applied. A new tin roof should have a third coat of Dixon's Silica-Graphite Paint the following season.

An attractive effect is secured by the use of Dixon's Natural on roofs. After several months' wear the dark oil on the surfaces wears off somewhat, and a slate-like appearance is given the roof by the Ticonderoga flake graphite pigment. This silvery grey shade continues during the long life of the paint.

Thousands of property owners have had practical experience with this product, and the money it has saved them, has secured for us their most favorable recommendations. Investigation of Dixon's Silica-Graphite Paint records is solicited.

## IMPORTANT TO BUYERS AND CONSUMERS OF LINSEED OIL.

**Read Carefully and Keep for Reference.**

The Paint Grinders' Association of the United States sometime ago issued the following, and it is quite as timely now:

"The life of all paint depends largely upon the quality of the linseed oil used in its composition. The best quality of paint or white lead, if thinned with adulterated or substituted linseed oil, will not give satisfaction. Unfortunately, there are on the market to-day many brands of so-called linseed oils, represented in some cases by direct statements as being pure, but more often sold as 'linseed oil,' 'boiled oil,' 'paint oil,' without any reference to their purity. As a general rule these spurious linseed oils are offered a few cents a gallon below the market, by so-called oil companies of little or no commercial responsibility, some even representing themselves as linseed oil crushers. We regret to say that there are also some firms of good reputation and of financial responsibility who handle and sell, as linseed oil, goods containing adulterations, which consequently are impure and dangerous alike to the dealer who sells it, the consumer who uses it, and the paint manufacturer or white lead corroder in whose goods it is used.

There is no substitute for pure linseed oil."

## A TAX ON SINGLE-BLESSEDNESS.

A bill has been introduced in the New York Assembly, entitled "An act to impose a tax upon all able-bodied bachelors and spinsters who are found to be deliberately persistent in their celibacy."

Some of the Dixon handsome bachelors who are "deliberately persistent in their celibacy," had better "cast an anchor to windward."

## WARM AND COLD.

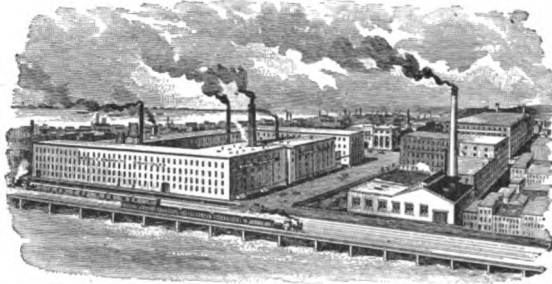
One arm of the Dixon Company is in Florida, where our cedar wood is cut. On a given day lately the mercury there was 80°F. Another arm is in Ticonderoga, New York State, where we mine the graphite, and on the same day the mercury at Ticonderoga was 24°F. below zero. The difference being 104 degrees F. This surely proves what we claim, that we work in both ends of the earth.

—JOHN A. WALKER.

ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J., U. S. A.

### SALESROOMS AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Horgen (Switzerland), Finland.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., April 1903.

### STEEL STEAMSHIPS.

An event of great interest in the maritime world will be the launching of one of the enormous twin steel steamships being constructed by the Eastern Shipbuilding Company, which will take place at the company's yard in Groton, Conn., this month.

The entire surface of the exterior of the hull of the vessel has a priming coat of Dixon's Silica-Graphite Paint. The many advantages of this paint, as compared with lead and metallic paints, have won the approbation and endorsement of prominent naval architects and engineers, who have made careful investigations.

Under the personal supervision of President Charles Ridgely Hanscom, a naval architect and constructor of rare skill and ability, the vessels, which are the largest freight and passenger steamships in the world, are being constructed at a cost of \$5,000,000. Each of the vessels can carry on a single trip 1,500 passengers, besides 21,000 tons of American products and a crew of 300 men.

The vessels are being built for the Great Northern Steamship Company, St. Paul, Minn., and their special destination is to serve as a line running between Seattle and San Francisco to Hong Kong, Yokohama, Manila and other ports.

It is a well known fact that the expanding production of the Northwest, great as it has been during past years, has been handicapped by a lack of carrying ships. When it is considered that the capacity of each of these new vessels will equal that of six steamers of ordinary size, it

will readily be seen that this handicap is about to be removed.

The vessels are 650 feet long and 74 feet wide. They will be thirty per cent. stronger than any vessels now afloat, for they are encased in a hull of three inches thickness solid steel. They are built for stability and comfort rather than speed, yet the engines of 12,000 horse power will drive them through the sea at the rate of 14 knots.

The preparations which are being made for the accommodation of passengers and care of freight are the most perfect. All staterooms will be on the outside and perfectly ventilated, in fact the ventilation of the ships will be in advance of any system now in use. In transpacific steamers the temperature in the boiler room is always very high, and frequently at 150 degrees Fahrenheit. The boiler rooms of the Great Northern Company's steamships will be maintained at 80 degrees by an improved system of fan ventilation.

A perfect system of cold storage will be established, so that fruit shipped from California to the Orient will arrive in as good condition as when taken aboard.

The vessels will contain the largest electric plant ever set afloat for heating, lighting and steering, and to furnish power for all except the main engines. Forty miles of electric wires will be used.

In connection with the painting it is interesting to note that one gallon of Dixon's Silica-Graphite Paint weighs less than half as much as a gallon of lead paint, and the covering capacity of the former is twice as great, thus making the actual weight per square foot of Dixon's Silica-Graphite Paint less than quarter the weight of lead paints. As many tons can thus be saved in the weight of vessels by using Dixon's Paint, the advantage gained is obvious. This paint is naturally adhesive to metal, and can be easily brushed into minute crevices, which are frequently neglected when lead coatings are applied. Dixon's Silica-Graphite Paint never becomes hard and brittle; it is naturally elastic and its tough leather-like coating not only furnishes protection from corrosion, but yields with the expansion and contraction of the metal caused by extreme changes in the atmosphere to which an ocean steamer is often subjected.

The vessels of the Great Northern Steamship Company are expected to sail from the Pacific tri-weekly, taking 5,000 carloads or 100,000 tons of freight, which must be collected and handled each week in that territory. This is very interesting, not only to the farmers of the Northwest, but to American manufacturers whose products are seeking a greater outlet than the home market, as well as to all patriotic citizens of this busy country.

### UNDERGROUND WATER.

Professor Charles S. Slichter, in a paper entitled, "The Motion of Underground Waters," recently published by the United States Geographical Survey, estimates that if all the vast accumulation of water in the earth was placed upon the earth it would cover its entire surface to a uniform depth of from 3,000 to 3,500 feet. We hope there will be no overflow.

HENS lay eggs and men lay bricks.

### LEST THEY FORGET.

(With Apologies to Mr. Kipling.)

Oh may those mortals young and old,  
The kind that seek a little loan  
And promise to return the gold  
That we extend without a moan,  
Remember we are waiting yet—  
Lest they forget—lest they forget!

Those genial souls quite free from care,  
With craving for their wit to show;  
Who with a most confiding air  
Tell jokes we heard ten years ago,  
Remind them of their weakness yet—  
Lest they forget—lest they forget!

Those mortals mean who gossip love  
And dwell on yarns untrue, unkind,  
They're still on earth, far from above,  
And some day may be left behind.  
Do tell them they're not angels yet—  
Lest they forget—lest they forget!

Those pompous prigs who think by birth,  
Or any other reason why,  
That they do own this mighty earth,  
Also a star or two on high—  
Pray tell them we are living yet—  
Lest they forget—lest they forget!

—H. A. N.

### ARE YOU INTERESTED IN LINSEED OIL?

We print in this GRAPHITE an editorial which appeared in the December 15, 1902 issue of the *Oil, Paint and Drug Reporter* of New York, and the following is what the American Linseed Company have to say about it:—

“The editorial is a fair setting forth of the methods of the compounders of adulterated linseed oil.”

“The aforesaid compounders word their literature so adroitly that they ‘fool some of the people all the time’ and reap a rich harvest at the expense of their victims, but we hope this friendly warning will defeat their purpose. They enlarge on the alleged virtues of their so-called ‘Kettle Boiled Linseed Oil’ because it is in boiled oil they have the greatest opportunity to ‘get in their work.’ Boiled linseed oil recently shipped by one of the most successful ‘mixers’ to a country customer was analyzed for us by a competent chemist, who certified as follows:—

“‘The foreign unsaponifiable matter is a mixture of petroleum oil and rosin oil. This, together with the apparent rosin by ‘Twitchell’s method,’ indicates an adulteration of nearly fifteen per cent.’”

“Unlike the leopard, who cannot change his spots, the oil adulterator changes the name under which he masquerades, as often as he finds it expedient, so that a list of the fraudulent concerns would only be temporarily correct.”

### A FAST RUN.

Through the courtesy of the editor of *Railway and Locomotive Engineering*, we have come into possession of the following report. As we have not been given the liberty

of publishing the names, we suppress same, believing that the report will be interesting in itself:

“A fast run was made on—Division of—Road, with Engine No.—, which we consider quite good; the engine was one of our Richmonds received from the works last year. We think her performance has been exceptionally good. She was first put in fast passenger service, and during the first month she ran 6,940 miles without one minute’s delay. She has made about 60,000 miles in passenger service during the past eight months, and she is the most convenient and easiest riding, and in every way the most comfortable engine that we ever saw. We consider that a large portion of her success is due to the liberal use of Dixon’s Pure Flake Lubricating Graphite. We mix it with the valve oil and feed it through relief valves and through direct oilers on driving and trailer journals.

“I find the engine will run much faster and is much more powerful when, after working condensation out, we give her a dose of mixed graphite and valve oil through the relief valve.”

### FROM A PROMINENT LAWYER.

JOSEPH DIXON CRUCIBLE Co.,  
Jersey City, N. J.

Gentlemen:—

Herewith I hand you draft for \$4.15, for which please send me as follows:

5 lb. can of Pipe Joint Compound,	. \$ .90
5 lb. can Special No. 635,	. . 1.50
5 lb. can Graphitoleo,	. . 1.75
	<hr/> \$4.15

Have used the samples which you sent me on my steam automobile, and am so well pleased that I desire to lay in a supply. Kindly forward promptly, and oblige,

### ADULTERATED LINSEED OIL.

Much annoyance has been caused the manufacturing and jobbing trade this season by the fraudulent misrepresentation of unprincipled mixers of linseed oil in getting their spurious product on the market. Adulterated linseed oil is no new thing. The cities of Chicago and Cleveland have been the centers of these mixing industries in the West for several years, and an extensive business has been carried on. In some cases the buyer is probably aware of what he is buying, but nine times out of ten a fraud is committed on some one before the oil goes into actual use. A good many buyers apparently are not aware of the fact that pure linseed oil is as staple an article as any of the farm products sold, and that for the pure article there is a fixed market price varying but a cent or a fraction of a cent among the different sellers at any given date. Every now and then a letter from some alleged house, of which no one in the trade has ever before heard, is sent to buyers of linseed oil offering “pure” linseed oil at a price ranging from four to ten cents below the market price for standard brands. These circular letters are sent out in large numbers, and the smaller buyers of linseed oil are usually the ones who receive them, and very often orders are placed as



a result of these letters, the consequence being that the purchaser becomes the victim of the adulterator.

Some of the adulterators have established places of business, where the mixing of pure linseed and cheaper oils is carried on. Others are what are known as "bung-hole" mixers, pure and simple. A short time ago we received a letter from a prominent wholesale drug house in the West, reading as follows:—

"Editor *Oil, Paint and Drug Reporter*, New York:—We have had considerable trouble during the last year with 'fake' linseed oil that is being offered by houses throughout the country, particularly in Chicago. These factories, we understand, do not manufacture linseed oil, but either buy it and adulterate it or manufacture a 'fake' article.

"The enclosed letter, you will notice, represents apparently in the left hand corner a very large establishment covering what would seem to be nearly a block of buildings. As the prices at the time this quotation was made were much below the market, we wrote to Chicago and were informed that there was no mill at the address given, and further that the name of the concern was not given in the City Directory or in the Telephone Book."

The concern referred to is Emory, King & Co., and the letter-head of this concern would indicate that their business was a very extensive one. In the upper left hand corner is a cut of an old mill, said to be located at the junction of three railways. Upon investigation we find that there is no such junction, nor is there in Chicago any such mill as is pictured on the letter-head. We have before us a letter addressed by Emory, King & Co., to a druggist in a small town in a western state, quoting prices considerably below the market for that day. The letter reads as follows:

"Dear Sir:—We take pleasure in quoting you, in barrels f. o. b. Chicago, our own brands of Strictly Guaranteed Linseed Oils, as follows:—

Fire-boiled linseed oil,	44c
Settled raw linseed oil,	43c
Queen brand boiled oil,	41c

Terms 30 days net or 2 per cent. cash 10 days.

"We absolutely guarantee our fire-boiled oil to be pure, and to be boiled over a wood fire without dryers or adulteration.

"Queen Brand is boiled with artificial dryers, but is equal to most of the brands of boiled linseed oil.

"Hoping to receive your orders on the condition that the oil may be returned at our expense if not satisfactory, we beg to remain,

"Yours very truly,

"Emory, King & Co."

A representative of the *Oil, Paint and Drug Reporter* called at the address given as the "General Offices" of the company in Chicago. On the door of a small office were printed the names of two Chicago lawyers in large letters, and in small letters at the bottom of the glass, the name of the oil firm was printed. A stenographer was in charge, but little information was obtained. The representative of the *Reporter* was informed that Emory, King & Co. simply received their mail at the office, and when asked if it was a Chicago concern, the reply was that it was an Eastern concern. Upon inquiring where the mill was located, the

reply was that it was located somewhere in Pennsylvania. Our representative was further informed that the company had no Chicago representative, but there was a man in Chicago who sometimes came to get the mail. The name of this party could not be ascertained. When asked about the office hours, the reply was that he came in about five o'clock, sometimes later, sometimes earlier, and sometimes he did not come in for several days.

The small dealer, on receipt of a quotation at a much lower figure than the jobber's, will undoubtedly feel dissatisfied, thinking that the jobber has been asking him too high a price. This has caused a great deal of annoyance, and not a little loss of business to the legitimate jobber. Analyses of these adulterated oils show heavy adulteration with mineral oil, fish oil, resin oil, corn oil, etc. Mineral oil is the most commonly used in adulterating, because it is the cheapest. The adulterators attempt in their literature, as in the letter-head above referred to, to convey the impression that they are crushers on a large scale, when they probably have never crushed a bushel of seed, but simply buy their linseed oil and adulterate with cheap mixtures. The trade is warned against these concerns, and they may generally be located by the prices they quote.

—*New York Oil, Paint and Drug Reporter*.  
Editorial from issue, Dec. 15, 1902.

#### DIXON'S FLAKE GRAPHITE FOR RAILWAY USE.

The following should be of interest to superintendents of motive power and master mechanics of railway companies. They are expressions of opinion by master mechanics and superintendents of motive power of railway companies. The remarks were made to a Dixon representative.

As we know that railway officials do not care to be personally quoted, we omit names and substitute numbers.

Any superintendent of motive power or master mechanic who is not familiar with Dixon's graphite will promptly receive samples on application to the Dixon Company.

1. Have used Dixon's Flake Graphite on the fronts of engines and are pleased with the result. Considers this test a very severe one.

2. Found Dixon's Pure Flake Lubricating Graphite exceedingly satisfactory in practical tests on locomotives.

3. Used Dixon's Flake Graphite for lubrication in connection with machine oil, and is highly pleased with the result that he has obtained on locomotives.

4. Used Dixon's Flake Graphite with signal oil on the fronts of engines, and also used it with waste in boxes. It is a fine thing for lubricating.

5. Used Dixon's Flake Graphite with oil for lubrication and found it satisfactory.

6. Thinks there is nothing equal to Dixon's Flake Graphite for lubrication.

7. Used Dixon's Graphite on parts of locomotive subject to friction.

8. Has recently received official orders to give out Dixon's Flake Graphite to the men, and instruct them to use it carefully. Thinks it will prevent a large amount of trouble.

9. Used to buy Dixon's Graphite in ten-pound pack-



ages, and now buy it in 50-lb. lots. It is astonishing how many ways it can be used. The firemen use it on the front ends of locomotives, and it is going to be used a great deal more in the years to come.

10. Used Dixon's Flake Graphite on journals and find it highly satisfactory for all lubricating purposes.

11. Has used large amounts of Dixon's Flake Graphite and speaks of its excellent qualities in connection with boiler plugs.

12. Has used considerable flake graphite for hot boxes and for general lubrication. Is highly pleased with the results. Mixes the graphite with a little machine oil.

13. Has been experimenting with Dixon's Flake Graphite on the front ends of locomotives, and finds that its durability proves it to be far more economical and satisfactory than other coatings which may be much cheaper in point of first cost.

14. Has used considerable flake graphite, and finds it highly satisfactory, especially on valve work. His men realize its value and purchase it with their own money.

15. Uses Dixon's Flake Graphite mixed with signal oil for the front ends of locomotives. For this purpose it is the best thing in the world. When the paint men come around to bother our firemen, the latter won't listen to them, for they know they have the best looking locomotives on duty. We also use Dixon's Graphite Paint on turntables and bridges.

16. Uses a great deal of Dixon's Flake Graphite on locomotives and on driving boxes. Places it underneath the waste so that it won't clog oil holes. Also uses it on the front ends of locomotives, applying it with a piece of waste saturated with signal oil. It is excellent for this purpose, for no matter how much dirt the engine has gone through, the front can be wiped clean. Once a week is often enough to apply graphite to engine fronts in ordinary service.

17. Is highly pleased with Dixon's Flake Graphite for lubrication. Mixes it with oil and also uses it when replacing bolts on his locomotives. Will soon build two new steel railroad bridges 100 x 50 feet, and repaint two old ones which need repainting.

18. Uses Dixon's Flake Graphite with valve oil for lubrication, and finds it gives satisfaction. Knows of nothing that will equal it for lubricating machinery of any kind.

19. Always makes it a point to keep a supply of Dixon's Flake Graphite on hand for use in putting on nuts and for cooling purposes. Used it for years with great satisfaction.

20. Used Dixon's Flake Graphite for engine fronts and lubrication. Mix it with signal oil.

21. Has used Dixon's Flake Graphite for the last three years and is very much pleased with it.

22. Praises Dixon's Flake Graphite highly. Has used it for many years as a lubricant. Mixes it with a little machine oil.

23. Has used Dixon's Flake Graphite ever since it was first known. Mixes it with signal oil forming a paste. Finds it an excellent lubricant for breaking in new engines as well as for the lubrication of old ones.

24. Uses Dixon's Flake Graphite for lubrication for locomotives, and finds that it gives excellent service. Especially advocates its use on hot journals. Mixes the graphite with signal oil forming a paste.

25. Uses Dixon's Flake Graphite and finds it very satisfactory.

26. Always found Dixon's Flake Graphite very reliable.

27. Made a test of Dixon's Flake Graphite No. 2 on car couplers, and found that they could be operated much easier after the graphite had been applied to the parts of the coupler subject to friction. One of the advantages of dry graphite was that it would not collect dust. Thought it might be used extensively and with much saving of time and annoyance.

28. Has used considerable flake graphite for lubrication, and finds it all right.

29. Has saved considerable time and money having the men use Dixon's Flake Graphite on boiler plugs. It is a great help and all engineers should know about its use. Discovered how useful it was for this purpose, and has instructed his men who are delighted with it.

30. Spoke highly of Dixon's Flake Graphite for lubrication, and found it highly satisfactory.

31. Said there was nothing to equal Dixon's Flake Graphite and oil for coating hot bearings. Uses Dixon's Flake Graphite with oil for general lubrication.

#### GRAPHITE IN ELECTRICAL INDUSTRIES.



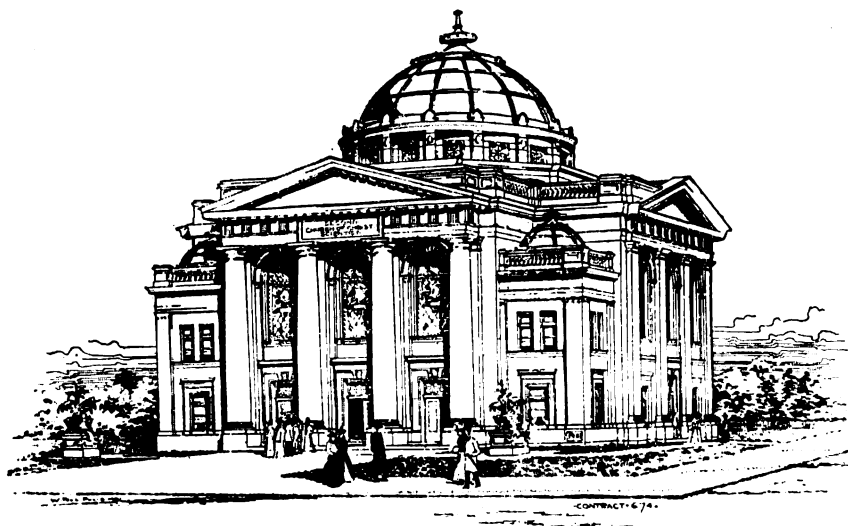
Graphite, which is one of the forms of carbon, and more generally known as plumbago or black lead, has come to be an important factor in electrical industries. It is a graphite crucible which is used for electrical smelting, and it is a graphite pencil or rod which is used as an electrode in the process of electrical smelting. It is graphite pulverized to an impalpable powder that is used in electrolytic work by copper smelters and others. Pure flake graphite is used for lubricating cylinders and bearings of engines and dynamos, and the same material also forms the pigment for protective paints for trolley poles, electric light poles, and roofs of dynamo plants and trolley car sheds. Graphite would therefore seem to be a very important factor in electrical industries. The demand has very greatly increased for graphite resistance rods. Unlike German silver, it is not necessary to take into account the factor of quantity. For instance, a six-inch rod one-fourth inch in diameter may be made to have one ohm resistance or 10 ohms, or 1,000 ohms, or in fact almost any resistance that the electrician may require. The only reason for changing the dimensions of such rod would be either convenience or for radiating the heat when it is necessary to carry a current of considerable quantity at high resistance. Joseph Dixon was the originator of the graphite industry, and the Dixon Company are now the most extensive miners, manufacturers and importers of graphite in the world. We are paying particular attention to the requirements of electrical engineers, and are supplying the electrical industries with large quantities of material.

## STEEL CONSTRUCTION IN THE WEST.

Among the new buildings of steel construction in the West is the Second Church of Christ, Scientist, Kansas City, Mo. The building will be erected on Troost avenue and 31st street, under the supervision of the architect, F. R. Comstock, 41 West 24th street, New York City.

It is a significant fact that this building stands on the highest point of ground in that vicinity, and when completed its well proportioned dome will stand out on the sky line and can be seen from all points of the surrounding city.

All steel and iron work is being protected with three coats of Dixon's Silica-Graphite Paint. The entire auditorium floor, which is supported on iron columns and steel beams, will be constructed with fireproofing and finished with marble and mosaic and marble base. The main stair-



way to the auditorium will be constructed of iron and marble. The ceiling of the auditorium is supported by iron trusses, which are in turn carried by iron columns.

In the centre of the auditorium are two stairways which open directly to the foyer below. It is interesting to note that while this scheme of special stairway is new in a modern building, it was used in the arrangement of the Coliseum, erected by Titus in 80 A. D.

The exterior is designed in the classic style of architecture, in that period known as Roman Doric, and in bringing out the detail of the exterior and interior, careful study has been given to producing a perfect building after this ancient style, making the building complete and harmonious in all its parts.

As little wood work will be used as possible in connection with the door and window finish, all parts of the detail being brought out in a special design, special attention being given to the metal frames of the windows that are filled with leaded art glass, to properly arrange for the condensation on the inside of the glass, and to prevent the moisture discoloring the interior finish.

The decorations of the auditorium will be in soft shades of old rose and ivory white, with a slight blending of light greens and buffs to bring out the architectural effects.

## LINOTYPE GRAPHITE.

DENVER, COLO., Dec. 29, 1902.

JOSEPH DIXON CRUCIBLE CO.,  
Jersey City, N. J.

Gentlemen:—

Your No. 635 Graphite is a wonder-worker. I have given it a thorough trial for the last two months in this office on eight machines doing high-class book and job work. By the use of this graphite I have been able to reduce the tension on justification springs, which means much saving in wear on first and second justification cams. I prefer the dry to the oil-ground.

To further show you that I think it is a good thing, will say that through my recommendation, three pounds of the No. 635 (dry) Graphite have been purchased of the Consolidated Supply Company of this city. When I received the free samples from you I gave Mr. John Duncan of the Leadville (Colo.) Herald-Democrat some of it to experiment with. In a letter from him this week he requested me to buy one pound for him, which I did. In his own words:

"It is the best ever."

Mr. Viser, of the firm of Bagley, Tulley & Viser, asked me about it, and I told him where he could get it. He says it fills the bill to a "T."

Mr. Knox, machinist at the Western Newspaper Union, also asked me for some of your samples to try. He has since bought a pound of it.

Mr. Luther Hackleman left here two weeks ago to take charge of Linotype machines on the St. Louis Star. I told him

about your graphite and he said he would give it a trial.

These orders, together with one pound bought by myself, make four pounds of the No. 635 (dry) Graphite that have been purchased of the Consolidated Supply Company in this city. They do not handle oil-ground. It can be purchased of them at 45 cents per pound can.

Possibly by a little hustling on the part of your agents here, this graphite could be introduced into the News, Republican, Post, Reed Publishing Company, W. F. Robinson Printing Company, Kistler Stationery Company, Eames & Eames, and Merchants Publishing Company, all of which firms have from one to thirteen Linotype machines.

Here is another: Get some shotgun crank to try it on his pump gun, either Spencer, Marlin or Winchester. It works fine on ejector slide.

Hoping that you will overlook any slowness on my part in not answering your favor sooner, I remain,

Yours truly,

C. W. WILDEY.

Care Smith-Brooks Printing Company,  
Denver, Colo.

## IN VINO VERITAS.

Drink and the world drinks with you, but settle the bill and you settle alone.—*Marysville (Mo.) Tribune.*

### A SOUTHERN SKY-SCRAPER.

The accompanying illustration shows the twelve-story office building being erected for the Columbia Real Estate Loan & Trust Company in Columbia, South Carolina, by the Tide-Water Building Company, general contractors and engineers, with offices at 25 West 26th street, New York City. Messrs. Brite & Bacon, New York City, are the architects.



The construction work started in October, 1902, and the building will be ready for occupancy July 1, 1903. The Tide-Water Building Company does all its own engineering and erecting of iron work, as well as its own masonry and carpentry, mill work and painting; thus being entirely independent of outside help in these important branches.

Before any piece of work is commenced the necessary details are carefully studied out in the drafting room, which reduces the chance of error, and serves as a valuable aid to the architect or engineer having to do with the designing of the building.

The Columbia office building will be a pioneer among buildings of structural steel in the south. The structural steel work is protected from corrosion by Dixon's Silica-Graphite Paint.

### TEACHING IS AN ART.

Samuel Hamilton, Superintendent of Schools of Allegheny County, Pa., says:

"Teaching is an art and the true teacher is an artist. Childhood is her material, the schoolroom her studio, the facts of science and the incidents of school life are the tools, and the human soul is the finished picture."

### GRAPHITE FOR LUBRICATION.

*To the Editor:*

One of your recent articles referred to the scale formed in ammonia pipes through the oil (of cylinder) in connection with impurities. The question arose in my mind: What advantage would graphite lubrication have over oil lubrication? Would graphite act detrimentally on the ammonia directly? Would graphite settle in the pipe coils and connections, or would it circulate continuously?

M. M. G.

ANSWER.—Graphite, if of sufficient purity and lubricating capacity, being a non-volatile solid substance, would be less apt to be carried through the refrigerating system by the ammonia vapors than lubricating oils.

The graphite would not have any detrimental action on the ammonia, either in a direct or in an indirect manner.

The graphite which was carried into the pipe system by the ammonia vapors would settle in the coils and connections and would not circulate continuously, at least no more so than oil would.—*Ice and Refrigeration.*

### GRAPHITE FOR CYLINDERS OF INTERNAL COMBUSTION ENGINES.

A patent has lately been granted for a "method of lubricating the cylinders of internal-combustion engines, which consists in mixing a finely pulverized incombustible lubricant with the normal fuel-oil supply, and supplying said mixture to the engine cylinder."

So far as a "finely pulverized incombustible lubricant" is concerned, there is no substance that could possibly prove equal to Dixon's finely pulverized graphite, but we doubt if any such substance can be successfully fed with the fuel oil supply. We take it for granted that the inventor has in mind the use of gasoline as a fuel oil, and we fail to understand how he will be able to keep the graphite or "finely pulverized incombustible lubricant" in suspension, to say nothing of having the mixture successfully pass through the carbureter, and thence on with the vapor to the cylinders of the engine.

### IN MEMORIAM.

MOSES SWEETSER.

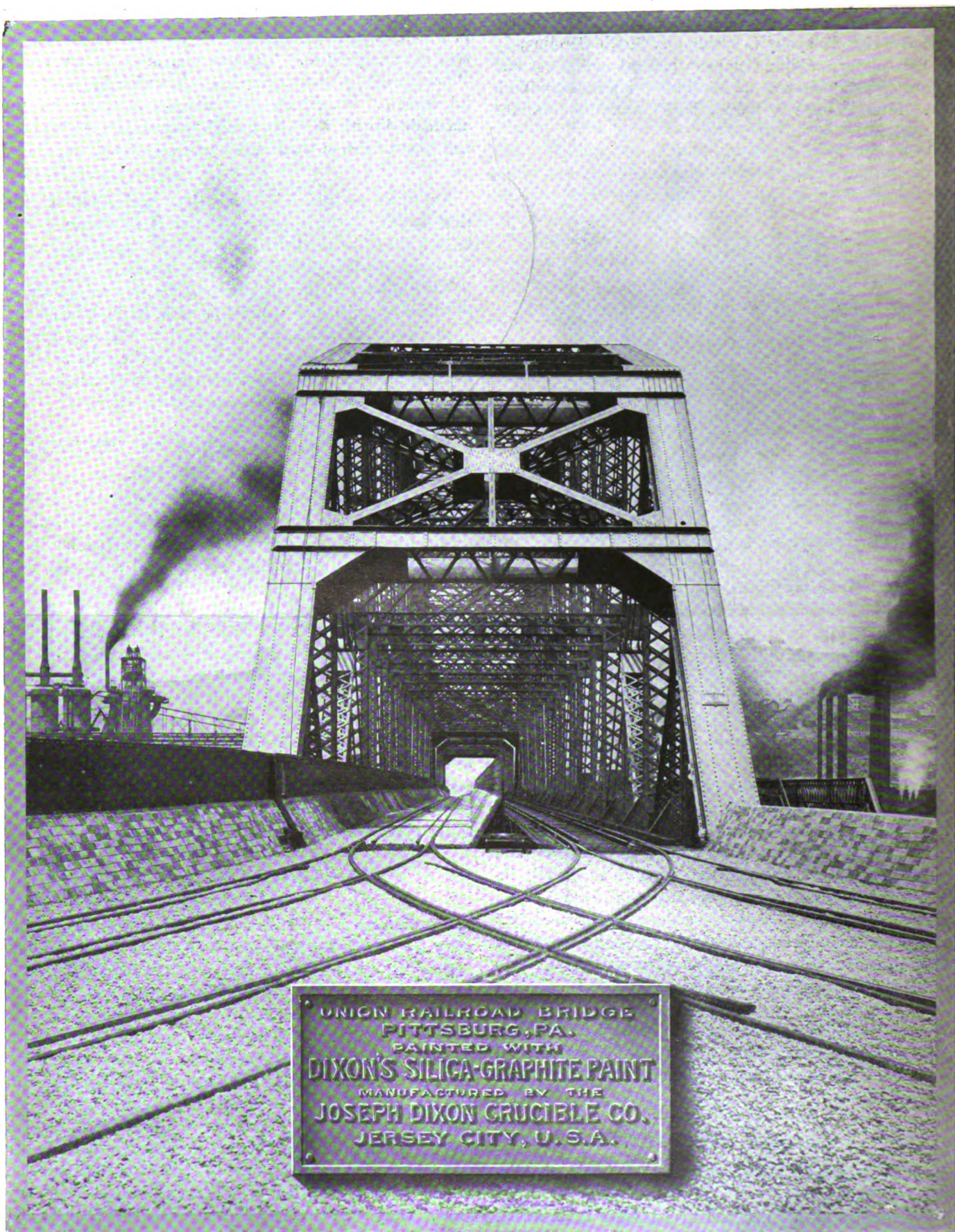
Our old-time friend Moses (as we all called him), passed away from earth Tuesday, March 10, 1903.

Carrying out the idea in Tennyson's "Crossing the Bar," he said it was time for the old ship to put to sea. He had passed his eightieth birthday.

Moses Sweetser was a nephew of Joseph Dixon and a frequent visitor to the Dixon office. He knew everybody. He was foolish enough at one time to fight the Standard Oil Co., but while it showed his folly it showed also the strength of his spirit. He knew well President Lincoln and President McKinley and was a warm friend of James G. Blaine. He was very proud of the Dixon Company and of us "boys," as he called us, who are making the company grow. Only six weeks ago he sent us his last bequest and a valuable portrait in oil of his "Uncle Joseph," which now adorns the walls of the president's office.

Peace and affection to his memory!—John A. Walker.







# Graphite

THE NEW YORK  
PUBLIC LIBRARY  
ASTOR LENOX AND  
TILDEN FOUNDATIONS

VOL. V.

MAY 1903.

No. 6.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

COPYRIGHTED 1903 BY THE JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.

## HOW COW BELLS ARE MADE.

We clip the following from *Youth's Companion*, and it may have an added interest to the readers of GRAPHITE when we inform them that we make these crucibles and sell them in car load quantities to the manufacturers of cow bells:

Cow bells that chime on the western plains, sheep bells that tinkle on the American sheep ranches, bells for grazing horses and mules, and, according to *Popular Mechanics*, all kinds of bells for the farm and ranch are made in one factory, which stands on a hillside street in a little town in Connecticut.

To several great cattle ranches of the West were sent recently a lot of bells tuned in sets of an octave each so that the bell bearers among the shifting herds answered each other in musical

chime. Ranchmen say that bells echoing in tunes across the plains deter wolves from attacking the herds.

The metal for the bells is received at the factory in large flat sheets of thin iron, direct from the rolling mill, and is passed under a steam driven cutter, which turns out the properly shaped pieces like patterns for a double-bladed ax. Then a ring for a clapper is fastened into the centre of each piece and it is spanned with a little iron strap for a handle. Finally the piece is bent down into the familiar bell shape and its side riveted together on the anvil.

The bell is now in shape, but it still lacks tone and color. These are gained by a coating of brass and a bath in a fiery furnace. In nests of four or five, the bells, ranging in size from the little three inch sheep bells to the seven inch cow bells, are placed with a mixture of charcoal and brass filings between them in plumbago crucibles, the lids of which are held in place by a plastering of wet clay. These are then immersed in the fire.

Within the crucibles the brass spreads itself in a thin coating over the imprisoned bells, and the bell obtains its clear note. All that need be done afterward is to burnish the bells, which is done by throwing them with a few leather scraps into a big revolving cylinder, in which they polish themselves.

If you have an automobile, read our pamphlet, *Dixon's Automobile Graphites*. It will pay you.

## WEARINESS OF BODY OR BRAIN.

Wade's *Fibre and Fabric* says:

Idleness is not one of the faults of the present age; weariness is one of its commonest experiences. The checks that many a man draws on his physiological resources are innumerable, and as these resources are strictly limited, like any other ordinary banking account, it is very easy to bring about a balance on the wrong side. Adequate rest is one kind of repayment to the bank, sound sleep is another, regular eating and digestion another.

One day's holiday in the week and one or two months in the year for those who work exceptionally hard, usually bring the credit balance to a highly favorable condition, and thus with care and management physiological solvency is secured and maintained. But a physiological fortune is as good a thing, or even a better thing, than even a money fortune. Stored resources, well invested, keep the mind easy and the body youthful. If, however, a man have not these, but only enough strength to go on steadily from day to day, he should watch carefully against excessive weariness. Health, like weather, may "break," and when once it is broken, nobody knows when the barometer will mark "set fair" again. Weariness, coming on in the ordinary course of work, without any special and temporary cause, is nature's demand for an immediate holiday. The horse is tired. He does not want the whip, but a month's run in a quiet and abundant pasture. As nothing in the world can properly satisfy hunger except food, so no drug or stimulant of any kind except rest can restore the weary to energy and health. The doctor's tonic is a very good thing in its way, but it will no more act as a substitute for rest than a glow worm's light will serve the same purpose as the moon.

## A SCHOOLBOY'S DIPLOMACY.

A boy lately wrote the manufacturer's of Dixon's American Graphite Pencils as follows:

dear mr Dixon i Write to you for samples of your pencils please send them Just as soon as you can and when you send the pencils i will send you the money. But understand I dont think you wont send them This is the reason i wont send the money i am afraid you wont get the money so please send them.

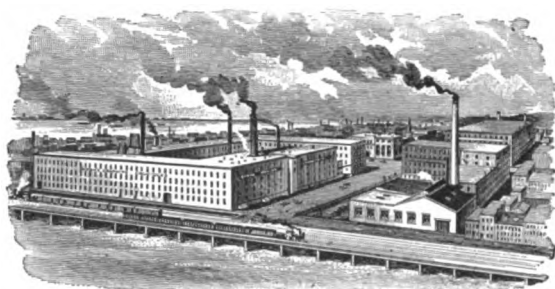
FRANK

Frank's ingeniousness would very probably have won him the coveted pencils had he not forgotten to tell us where he lived.

ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

### SALESROOMS AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Horgen (Switzerland), Finland.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., May 1903.

### GRAPHITE NEXT TO THE DIAMOND!

Or Graphite and Its Cousins.

By F. S. HYDE, CHEMIST.

The diamond, graphite and charcoal represent three allotropic modifications of elementary carbon.

Some authorities consider coal or anthracite as a representative form, although its composition is more or less complex, part of its carbon being in combination with hydrogen and oxygen. Others mention "amorphous carbon" as the third modification, ignoring the occurrence of graphite in the amorphous state.

However, under the head of "amorphous carbon" may be included a variety of residues and charred products such as lampblack, carbon black, bone black, coke, charcoal and gas carbon, resulting from the destructive distillation of organic material.

Many of the so-called amorphous graphites are hardly more than carboniferous schists, inferior in quality and with little or no lustre. Mineralogists consider graphite, "black-lead" and plumbago as one substance, viz., mineral carbon having a sub-metallic lustre, the term "graphite" being invariably employed to designate the flake or foliated variety. The word "black-lead" is certainly a misnomer from either a chemical or physical standpoint. If it were composed of the metallic element, "lead," its melting point would be so low as to render it useless for crucibles and stove polish. The similar property, possessed by both substances of making a mark, would afford no excuse for substituting the poisonous metal, "lead," for the non-poisonous carbon min-

eral, "black-lead," in the manufacture of pencils. Again, a graphite paint, made from the so-called "black-lead," possesses more inert qualities than any white-lead preparation derived from metallic lead.

High grade graphites (crystalline or foliated) approach the diamond in purity.

In the Dixon laboratory, samples of natural graphite, without previous purification, have been tested, which assayed 98.7%–99.1%–99.8% carbon, the material being very refractory and leaving only a slight residue.

While the diamond and graphite differ very much in hardness, being at extremes in a scale of 10, yet both resist oxidation; and when consumed at high temperatures, yield the same gas—carbon dioxide.

In these respects, as well as price, graphite is more of a "black diamond" than coal.

As to the terms, "white graphite" and "red graphite," sometimes used to designate talc and red hematite, it is only necessary to note that these materials are not carbon, but chemical combinations of other elements, respectively magnesium silicate and red oxide of iron.

Graphite, like the diamond, stands alone, unique, an element in itself! While artificial graphite, like the artificial diamond, has not yet superseded the natural article.

### PLEASANTRIES IN BUSINESS.

Mr. G. W. Holden, President of the Holden Patent Book Cover Co., Springfield, Mass., writes our Mr. Reed of the Dixon Educational Department as follows:

Grand High Rajah & Cockoloram Reed:

Dear Sir—Seeing your adv't in *Geological Magazine*, requesting information as to my position in the educational, literary and commercial fields, I wish to say,

I am engaged in educating the children of the United States in the use of my self-adjusting, back-action, armor-plate book covers, by the use of which each child can help keep me in cigar money and something to "blow in" whenever I meet any of your company at conventions.

In the literary line I have recently bought a set of 60 volumes of the World's Classics, comprising Oriental, Roman, French and English literature. I haven't read any of them, but it makes me feel literary to look at them.

In the commercial line I go out to try to get orders, but whether from lack of experience or want of cheek, or being properly dressed or I don't know what, I find when I get home I haven't taken any and I am still scratching my head to find out how it happens.

Now, if this fulfills the request in your adv't and entitles me to those wonderful samples of pencils, warranted to make life worth living, I'll be pleased to receive them.

Yours truly,

H. W. HOLDEN,

Springfield, Hamden Co., Mass.

P. S.—If out of pencils send me a spring overcoat, a high hat or any old thing.

### FROM DIXON'S LONDON BRANCH.

They come as a boon, and with blessings abound,  
Dixon's Flake Graphite and Pipe Joint Compound.



### DIXON'S GRAPHITED WOOD GREASE.

We are pleased with the results obtained from the use of Dixon's Graphited Wood Grease and are now using it on the cars of the Norfolk & Atlantic Terminal Company, ordering it through our General Purchasing Agent.

GEORGE W. HATCH, Supt.,  
Berkley Street Railway Company,  
Berkley, Va.

### DIXON'S GRAPHITED WOOD GREASE AND SMOKE-STACK PAINT.

Frederick, Md., Oct. 27, 1902.

Joseph Dixon Crucible Company:

Sirs—In answer to yours of the 17th, would say we are using your Graphited Wood Grease on our motors and it fills the bill to our entire satisfaction.

We also use your paint on our smoke-stacks, etc., with good results.

Yours truly,

GEORGE WM. SMITH,  
Pres. and Manager,  
Frederick & Middletown Railway.

### "LET HER RUN."

Some people put a belt on and "let her run." Others have more regard for their pocket-books and know that a belt becomes dry and that accumulated dust and dirt destroys the life of the leather and makes the belt smooth and hard and liable to slip.

Those who regularly clean their belts and apply some good belt dressing are wise; and wiser still are they who use Dixon's Traction Belt Dressing.

For the month of February, 1903, it seems the receipts of the Jersey City Postoffice fell off so much as to attract notice at Washington and have an examination as to why. We, the Dixon Company, consider ourselves a big part of Jersey City, and as our postage bills were 160% larger in February, 1903, than in February, 1902, we fly the flag of triumph and say it was not us.—J. A. WALKER.

### VALUABLE LUBRICANT.

A recent careful writer on lubricants says:

A lubricant to be valuable must have, first, a high point of decomposition under the effects of heat; second, sufficient body to keep the surfaces free from contact under pressure; third, as fluid as consistent with pressure conditions; fourth, capable of resisting oxidation or the action of the atmosphere; fifth, free from corrosive action on the friction surfaces.

These five conditions are filled with Dixon's Flake Graphite as with no other known substance. First, has no point of decomposition at all; no heat, however high, disturbs it; second, the thin filmy flake has just the necessary body—no more, no less than just enough to prevent the contact of the friction surfaces; third, while not technically fluid, it accommodates itself, as does nothing else, to the pressure conditions; fourth, it resists to perfection all oxidation and action of the atmosphere; fifth and last, it is absolutely free from any corrosive action. Here you have the five impera-

tive requirements for a good lubricant met in an ideal and perfect degree with Dixon's Flake Graphite, prepared for lubrications.—J. A. WALKER.

### LINOTYPE GRAPHITE.

We have received the following letter from Mr. Eugene G. Rideout, Operator-Machinist on the *Evening Record*, Wellsville, Ohio:

I have been using your graphite for three years, and lately, in reading over some of your testimonials, I noticed that no mention is made as to the effect your graphite has when used on new machines. It is a well known fact that "sticky letters" or matrices failing to drop is about the first trouble that occurs on a new machine, and nothing is more aggravating to the operator.

As I have been a first operator on five new machines in Chicago, Pontiac, Mich., and Wellsville, Ohio, and have found that Dixon's Graphite is the best I have ever used, it seems as if it might be of benefit to you to advertise it in that light.

The small sample you sent kept the machine dry and in good working order at the time when the Ohio River stood about three feet in the basement under the linotype.

I consider Dixon's Graphite death to dampness, oily magazine and matrices, and I could not work without it.

I have used the dry graphite heretofore, both on space bands and in magazine, but would like to try the oiled graphite for a while, as I believe it is best as a space band polisher. I enclose herewith an order for a one pound can to be sent to my address.

### BOILER PITTING CURED BY GRAPHITE AND OIL.

In an article in the *American Machinist*, Mr. T. T. Parker states that in a certain boiler, pitting was found in the mud drum. The drum was cleaned and scraped, after which it was painted with graphite mixed with cylinder oil. Measurements of the depths of the pits were taken, and six months after they were no deeper and no new ones were found. Other parties have since tried this experiment in mud drums, but it is too early as yet to give the result. However, knowing the character of plumbago, if the interior of a boiler could be painted with it in such a way that it would stay, it may be this would prove a remedy. He is satisfied, also, that the person doing so would kill two birds with one stone, as the scale could be easily detached. In a pair of cylindrical boilers, 42 x 28, occasional applications of cylinder oil (mineral) and plumbago have kept back corrosion on a trial of six months. Boilers were new when plumbago was used. The boilers, which the new ones replaced, were thrown out rotten from corrosion. The feed was mine water, as nothing else could be had. It is also stated that Harig, Koop & Co., Louisville, Ky., after experiencing more or less trouble from rust and scale in the mud drums of the boilers, applied with great success graphited oil, purchased from the Joseph Dixon Crucible Co., Jersey City. The mud drums were cleaned out and the graphited oil applied with swab or brush to the joints and parts where the water enters the drums. This process is repeated every four or six weeks.—*Engineering News*, Jan'y 5, '93.

### DIXON'S GRAPHITE STOPPERS AND NOZZLES.

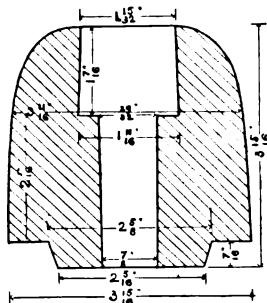
The following cuts exhibit the standard sizes, shapes and types of Dixon's Stoppers and Nozzles. These particular sizes and shapes we always have on hand ready for prompt shipment. If the Bessemer and open hearth manufacturers could find it convenient to bring their require-



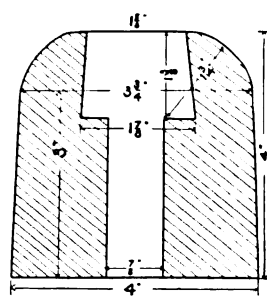
ments to these sizes, much time would be saved and more prompt delivery possible. We are, however, always glad to make any special shapes that may be desired; but as it is the order of the day to minimize details, we call the attention of stopper users to this matter.

Now a word or two concerning the Dixon Stoppers. A stopper is a small but very important article. The safe flow of tons of molten metal depends upon the strength and workmanship of the stopper. The breaking of a stopper means a loss of metal and oftentimes danger to workmen. The stopper manufacturer should on his part use his best materials and his best skill, and the iron stopper user should be willing to pay a fair price which at the most is a few cents each.

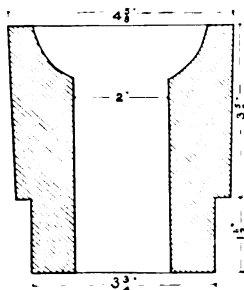
The Dixon Company has given the matter of stopper making most intelligent and careful study. We have made many experiments and we now make a stopper which is a vast improvement over anything heretofore made. We furnish a stopper that minimizes the danger and guarantees longer life and is made with the grain running *longitudinally* instead of *latitudinally*.



STOPPER No. 18.



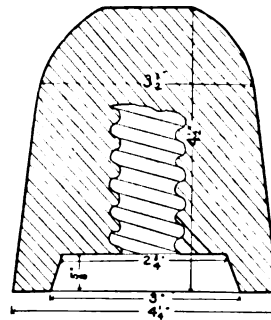
STOPPER No. 3.



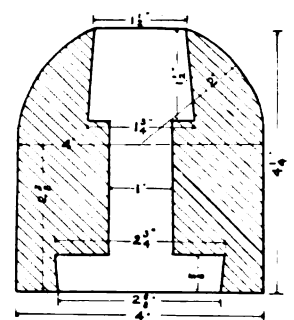
NOZZLE No. 1.

Most of the trouble with stoppers is caused by the stopper sticking to the nozzle and breaking latitudinally. The Dixon Stoppers absolutely and positively will not break in this fashion and we guarantee that they will not break in this dangerous fashion.

The different cuts herewith show the different sleeve attachments and the different methods of bolt heads, and they also illustrate the nozzles made to fit the standard types and sizes of stoppers.



SCREW STOPPER.



STOPPER No. 4.

The stopper and sleeve should be keyed up properly on the rod. If they are keyed up extremely tight when cold and then put into the molten metal, expansion is liable to break the stopper. A careful ladleman, however, watches this and loosens up the bolt enough to allow for expansion.

Stoppers should be stored in a dry and particularly in a warm place. We have heard of users leaving the unopened barrels of stoppers in an ice-cold storehouse. It is much better that they should be taken out of the barrel and placed where the air is dry, hot and toasting.

—JOHN A. WALKER.

### LEAD PENCIL SAVED HIS LIFE.

Carried in Man's Pocket, It Stopped Bullet Fired at His Heart.

We lately read in one of the New York papers where a man in Rochester, N. Y., attempted to force an entrance into the house of his brother-in-law. The brother-in-law shot at him with a revolver. The bullet tore through the intruder's overcoat just below the heart, and flattened itself against the lead pencil in the vest pocket. A slight scratch was the only mark visible on the man's body.

It is always good to have a lead pencil in one's vest pocket, and a Dixon pencil is unequalled for quality and, so far as we know, is as nearly bullet-proof as any pencil made.

### DIXON'S PURE FLAKE GRAPHITE.

"A Most Perfect Lubricant."

A practical engineer and member of the Brotherhood of Locomotive Engineers writes us as follows:—

"I got a chance to get a five-pound can of Dixon's Flake Graphite from a friend of mine. The engine that I run and on which I tried the Flake Graphite is a Richmond 22-in. cylinder, and I use her in helping service, that is, helping trains up the mountain. It was simply impossible to properly lubricate the valves with valve-oil, and I had to get off the engine in order to get oil to the valves, but with the graphite I gave the valves a little once a day, and now I have no trouble, and I can handle the reverse lever with one hand.

"I consider Dixon's Graphite a most perfect lubricant, and I wish you would send me the name of some firm in Denver handling Dixon's Graphite, as I am unable to get any more from the man of whom I got the five-pound can."

## LIFE ON THE SMOOTH LINE.

By THE HUSTLER.

The enginemen on the Smooth Line are up against the queerest proposition that they have struck in a long time. About two years ago, when they first began to bring the big engines on the division, they had a lot of trouble with hot bearin's. The 908 was brought here with a driving journal cut purty bad, and the right main pin was burnt black. Nearly all of the 900's give lots of trouble.

One day when Tom Akers was first set up, he concluded that he would answer the advertisement in the magazine and send for a sample package of graphite. He got his graphite all right, but didn't say anything to anybody else at the time. Tom had been on the 368 for nearly a month—the regular man bein' off for thirty days for runnin' into a hand car the other side of Goose Lake.

The "Old Man" kinder favored Akers—or rather had a heap of confidence in him—so he orders Shackler to put him on the 915 until they assigned a regular man for her. Shackler didn't like Tom Akers a bit, and as the 915 was making delay reports nearly every trip, on account of some-thin' runnin' hot, he thought there was a good chance to get Akers into trouble; so he didn't wait for the "Old Man" to tell him twice, but took Tom off 368 before the regular man reported for work and sent him out on the 915.

Tom didn't worry a bit about it—just went along as though he didn't expect any trouble at all. What bothered him most, though, was that Shackler put a green man on to fire for him. His name was Slager, I think. He didn't stay long, for he got everybody into some trouble by not knowin' his business.

Akers had been experimentin' with his graphite on the 368, and believed that he could make 915 run cool, with a little coixin'. The head brakeman took him down to the lower end of the yard and coupled on his train, where they had to lay nearly half an hour waitin' for 22.

Akers had found out from the man who made the last trip on her, just what was runnin' hot, and he didn't fail to use plenty of oil and graphite on these journals before he pulled out. This didn't keep the 915 cool, but he got over the road in good time and didn't delay any other train. He used nearly all of his oil; and as the Smooth Line would rather burn a pin off than to use more than the allowance, Akers got the pumper down at Hidalgo to let him have enough oil to get home with.

By the time Akers had made two or three trips on the 915, she was runnin' as cold as a man could wish. Then the "Old Man" began to grumble about the other big engines runnin' hot, and told some of the old runners that "it was mighty strange that the 915 wasn't givin' any trouble since he had put Akers on her."

Old Dad Moore lost an hour on 20, one trip, because an engine truck got mighty near red hot. You know, Dad he ain't a bit stuck up. Because he is an old-timer, and was an old-timer when Akers first went to firin', didn't keep him from goin' to Tom and askin' him to help him out with his hot truck journal. Tom wasn't a man to refuse to help anybody, so he ups and tells Dad how he was usin' oil and graphite. He divided the little he had left with Dad, and sent for more. Dad is a good old soul, and in another week

every runner on the road was sendin' for graphite and paying for it out of his own pocket.

The men sent a committee to the "Old Man" and asked that the Company supply graphite, as they didn't think it was right to have to supply lubricants for the Smooth Line. The "Old Man," who knew all the time that the boys were usin' graphite, told them that he had already sent in requisitions for graphite several times, without hearin' from them, but he had learned from reliable sources that the Company could not supply any graphite because the purchasin' agent had tied the Company up in a five-year contract not to permit the use of any kind of lubricant except the oil bein' furnished. The men kicked a good deal, but figured it out that it was cheaper to buy their own graphite out of their own pockets, as it didn't cost much anyway.

Now comes the funny part of the whole proceedin': The oil inspector for the oil company came over the Smooth Line and rode with old man Carew on the 909. When they went in on a sidin' to meet another train, the oil inspector began lookin' around the engine and spied the signs of graphite in the black lookin' oil which had run out on the right main pin which was tryin' to run hot.

"What's that you're usin' with that oil?" asked the inspector of old man Carew.

"Graphite," replied the old man.

"No wonder your pins run hot!" exclaimed the inspector. "If you'll clean that dope out of that cup and use the oil that is furnished by the Company, you will have no trouble."

The old man protested that nearly every man on the Smooth Line used to have trouble, until they went to usin' graphite.

The oil inspector hung around Mingo for several days, testin' the oil used by the Company, and loafin' around the engines as they came into the roundhouse. He couldn't help but learn that nearly every runner on the road was usin' graphite to some extent, and that the back-shop foreman was puttin' graphite in the oil which he used to pack the cellars of the engines he was turnin' out.

About ten days after the oil inspector left, one mornin' Shackler came out of the "Old Man's" office with a bulletin in his hand, which he tacked up on the board.

"Come here, you smart Alecks!" he shouted to a group of engineers who were standin' near the stove. "Guess you fellers can save some of that money you've been kickin' about spendin' for the Company, now!"

The boys, of course, were interested, and went over to see what the new bulletin said. It read like this:

OFFICE OF SUPERINTENDENT OF MOTIVE POWER,  
S. L. R. R.

To All Employees:

You are hereby instructed to discontinue the use of any lubricant except that furnished by this Company.

Anyone discovered violating this order will be discharged from the service for disobedience of orders.

L. G. GARRETT, Supt. M. P.

Springfield, Nov. 8, 190—.

"That means I will have to repack my drivin' boxes and truck cellars," said one.

"Yes, and clean out your guide and rod cups, too," said another.

You never saw such a rustlin' among the men. Maybe they did the work in too big a hurry, for that night there were three engine failures reported on the West End, all on account of somethin' runnin' hot. I never saw the Smooth Line so demoralized. Shackler swore that the men were "lettin' their engines go to h—l for pure d—n spite," and if he "was general manager of the Smooth Line he would fire every d—n man who caused a delay."

Things got a good deal better in a day or two, but the "Old Man" increased the oil allowance fifty per cent. It soon got no worse than it used to be; in fact, it wasn't so bad; for the big engines were thoroughly broken in, and their bearin's were in good shape; still there were plenty of grief and delay reports.

Mr. Morris, the traveling engineer, was hurt worse than anybody. He had just been complimented by Mr. Garrett on the excellent road service of the engines during his appointment, and now every day brought reports to him and to Mr. Bigelow of trouble somewhere. The men had got so they didn't care much whether they got over the road or not. Some of them said the Smooth Line "ought to go into the hands of a receiver who would clean out the officials that were runnin' the road in the interests of themselves and not in the interests of the stockholders."

Mr. Bigelow and Mr. Morris went to Springfield to see Mr. Garrett. When they come back, somebody took down the bulletin; but when Shackler was asked about it, he said he "didn't care a d—n." It was evident to the boys that he knew a good deal about it, but had been told to keep his mouth shut.

The boys are still buying graphite for the Smooth Line; but they figure it out that it is cheaper to spend their own money than to be in trouble all the time; but when the oil inspector comes along again, there's goin' to be trouble for them, sure.—*Locomotive Firemen's Magazine*.

### **MAKES HIM WANT TO USE MORE.**

An engineer to whom we sent a small sample of Dixon's Pure Flake Graphite, writes us, after trying the sample:

The sample came in due time, and I used it in a cylinder of a steam engine enough to make me want to use more.

### **DON'T MARRY A MAN UNTIL YOU HAVE SEEN HIM SHARPEN A PENCIL.**

Don't marry a man till you have seen him sharpen a pencil. You can tell by the way he does that whether he is suited to you or not. Here are a few infallible rules for your guidance in the matter:

The man who holds the point towards him and close up against his shirt front is slow and likes to have secrets. He is the kind of man who, when his best girl finds out that there are "others," and asks him who they are and what he means by calling on them, will assume an air of exceeding dignity and put her off with some evasive answer which says quite plainly, "Yes, I called, but it's none of your business who she is or why I did it." A woman with a jealous disposition should look out for the man who sharpens his pencil in this manner and shun him.

The man who holds the pencil out and whittles away, careless of results, is an impulsive fellow, jolly, good-natured and generous.

He who leaves a blunt point is dull and plodding, and will never amount to much. He is really a good-hearted fellow, and hasn't an enemy in the world. He finds his chief pleasure in the commonplace things of life.

On the other hand, he who sharpens his pencil an inch or more from the point is high strung and imaginative and subject to exuberant flights of fancy. He will always be seeking to mount upward and accomplish things in the higher regions of business and arts, and his wife's greatest trouble will be to hold him down to earth and prevent his flying off altogether on a tangent.

The man who sharpens his pencil all round smoothly and evenly, as though it were planed off in an automatic sharpener, is systematic and slow to anger. But he is so very undeviating from a fixed principle that he would drive a woman with a sensitive temperament to distraction in less than six months.

He who leaves the sharpened wood as jagged as saw teeth round the top has a nasty temper, and will want to quarrel on the slightest provocation. There are certain women who can manage that sort of man beautifully, though, and if he gets a wife with a calm, persuasive eye, he will in a few minutes be as meek as a lamb.

The man who doesn't stop to polish the point of lead once the wood is cut away has a streak of coarseness in his nature. He who shaves off the lead till the point is like a needle is refined, delicate and sensitive.

—*New York Journal*.

### **WHAT IS A LUBRICANT?**

LUBRICANT: Anything that lubricates; specifically, a substance, as graphite, oil, or grease, used to diminish the friction of the working parts of machinery.

—*Standard Dictionary*.

LUBRICANT: That which lubricates; specifically, a substance as oil, grease, plumbago, etc., used for reducing the friction of the working parts of machinery.

—*Webster's Dictionary*.

The highest authorities consider graphite as a lubricant and as the finest solid lubricant known to science or practice.

Other solids such as lead, soapstone, mica, etc., may help to fill up the microscopical inequalities of bearing surfaces, but have no lubricating value.

Dixon's flake graphite not only fills up all such inequalities, but fills them better and forms a veneer-like surface on the bearing parts of marvelous smoothness and freedom from friction.

Samples and booklet free to those interested.

### **GRAPHITE FACING.**

Dixon's Silver Lead, or Graphite Facing, Trade No. 6726, has a famous name for all around green sand work.

One man orders a barrel to-day and writes: "I was persuaded by a competitor of yours to take something else, chiefly because it was well talked up and cheaper. It was guaranteed to be equal to Dixon's 6726. It did not prove at all as good, so please send me a barrel."

### LOCOMOTIVE LUBRICATION.

Concerning better lubrication of locomotives, we take the following from *Locomotive Firemen's Magazine*, for February, 1903:—

MR. HIGGINS (Engineer of Tests on C., B. & Q.): The lubricator that we have to-day, to me, is a very poor piece of mechanism. First, you start the lubricator going. Before reaching the valve the oil must travel through a pipe some twenty feet long, and all this space must be filled before the valve is lubricated. The engineer, when he starts out on the trip, allows so many drops a minute, and it does not matter if he is going twenty-five or forty-five miles an hour, he feeds just the same quantity of oil.

It seems to me that a pump could be attached to the steam chest and arranged to pump a drop for a given number of strokes. This would give the oil directly to the valve and not be wasting when the engine was not moving.

I had the pleasure of being in one of the large shipbuilding yards on the Clyde River, in Scotland, this last summer, and noticed that no lubricators were put on the engines. Upon inquiry I found that no oil is used to lubricate valves or cylinders, except a swab on the piston rod. They use dry graphite only, and will run for six or seven days continuously, and experience no trouble. This matter of valve oil has become a large item, and it seems to me that some investigation with graphite will surely pay.

If they can run a marine engine for a week without shutting down, without using oil, it seems as though we could, perhaps, use graphite in connection with oil, and save this enormous cost of valve oil which now stares the engineer in the face every time he goes to draw a can of oil.

MR. ROESCH: Mr. Wells spoke of putting plugs in driving box cellars. We tried that on the Colorado and Southern, putting one plug in each corner of the cellar. While it is a pretty fair device for packing the cellar, it is not a cure-all by any means, and the trouble was to know if the cellar was properly packed. I believe if the cellars were properly packed with a perfectly spongy packing and then an oil pipe were put on, so that the engineer would pour oil into that pipe, and let it go into the cellar, that we would have much better success.

In regard to the graphite proposition, I wish to state that we have been using graphite in connection with valve oil for lubricating cylinders for some time by means of an automatic graphite lubricator, but its success depends largely upon the location of the lubricator. If we do not get the lubricator located at the proper point much of the dry graphite is carried out through the exhaust—carried right out through the stack—but it has given us very good results as compared to oil lubrication. We use it dry. The lubricator is attached to the steam chest, and it holds about three-quarters of a pound of graphite and makes about 400 to 1,500 miles. It saves about enough in oil to pay for the graphite. But it was not put on with the intention of saving oil; simply to save cylinders.

MR. PAXTON (Superintendent of Motive Power, Colorado and Southern): High steam pressure as used nowadays is accountable largely for the difficulty we have in lubricating locomotive cylinders, and if we keep on increasing the pressure we will have added difficulty in finding a fluid

that will do the work. We will be obliged to resort to graphite or do like the government the gentleman speaks of, run without oil at all.

### OUR QUEER LANGUAGE.

When the English tongue we speak  
Why is "break" not rhymed with "freak"?  
Will you tell me why it's true  
We say "sew" and likewise "few,"  
And the maker of a verse  
Cannot cap his "horse" with "worse"?  
"Beard" sounds not the same as "heard";  
"Cord" is different from "word";  
"Cow" is cow, but "low" is low;  
"Shoe" is never rhymed with "foe."  
Think of "hose" and "dose" and "lose";  
And of "goose"—and yet of "choose."  
Think of "comb" and "tomb" and "bomb";  
"Doll" and "roll"; and "home" and "some";  
And since "pay" is rhymed with "say,"  
Why not "paid" with "said," I pray?  
We have "blood" and "food" and "good";  
"Mould" is not pronounced like "could."  
Wherefore "done," but "gone" and "lone"?  
Is there any reason known?  
And, in short, it seems to me,  
Sounds and letters disagree.

—St. Nicholas.

### LINOTYPE GRAPHITE.

The following letter has been received from Mr. A. H. Jordan, of the *Argus* office, Easton, Pa.:

"For the past two years I have been using Dixon's graphite for various purposes around the linotypes. I found the oiled graphite fine for keeping space-bands in order, enough of it communicating to matrices to make them run smoothly, while the space-band box is also improved in operation.

"Have been using the dry graphite for rubbing down matrices inclined to stick in the magazine channels.

"My troubles were numerous before I learned the merits of Dixon's products.

"Lately I have been troubled with sparking commutators. Application of your Commutator Dressing has made relief agreeably permanent.

"I shall lose no opportunity to speak highly of Dixon's graphite, and recommend it on its real merits."

### CONCERNING DIXON'S GRAPHITE BRUSHES FOR ELECTRIC MOTORS.

One of the Dixon customers in remitting for graphite brushes writes as follows:—

"The Dixon Brushes are the best on earth in our estimation.

"Our dynamo used to spark under any load, and it was impossible to keep commutators in shape, but now the commutators are as smooth as they can be and never show a spark.

"I heartily think that the Dixon Brushes are the only brushes fit to be used, as there is practically no wear on the commutator."

## Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, type-writer work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing.**

**Dixon's Plumbago for Powder Glazing.**

**Dixon's Plumbago Foundry Facings.**

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite.**

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Cycle Chain Graphites**, for perfectly lubricating chains and gears of bicycles.

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Anti-Flux Brazing Graphite**, to prevent the spelter from adhering when brazing.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians.**

Special circulars with detailed information sent on request.

## BEING A GOOD FELLOW.

Writer Declares It Is a Losing Game in the End.

Any sensible young man ought to know that he can't be up late nights abusing his stomach and be in full possession of his faculties for business the next day. And he ought to know, also, that a man must be clear-headed and in full possession of his faculties to hold his own in the keen competition of life. Your "good fellow" is popular for the time being, but when his money is gone and he has lost his job and is on his uppers the "good fellow" business doesn't get him anything. It's "poor fellow" then. Another good man gone wrong, and "the boys" are ready to hail another "good fellow" who has the price.

We don't mean by this to say that "the boys" are mercenary. They don't altogether pass up a "good fellow" when he goes broke, but it isn't the same. They say he hit the booze too hard and couldn't stand the pace. They feel sorry for him, but he is out of it. His good fellowship doesn't excuse him even in the eyes of his friends for having thrown away his opportunity.

The young man who gets the sleep his system needs, is temperate in his habits, lives within his means, and shows up for work in the morning with a clear eye and active brain—that's the man business men are looking for. They want employees whom they can trust. Having worked hard and laid by a competence, they want to throw some of the burdens off, and they won't throw them off on the employee who is too much of a "good fellow."

Cut it out, boys. There is nothing in it. There's a whole lot of nonsense in that "good fellow" business. You can't fool the public very long by living beyond your means and keeping up appearances. There must be a show-down some time or other, and that means a loss of self-respect and many bitter experiences. All men will think more of you if you hold yourself in and don't try to live a wine existence on a beer income.

Many a bright and promising business man has failed because he tried to travel in too swift a class, whereas, had he lived within his means, he might have become a highly successful merchant.

The world doesn't give up its treasures easily. It isn't in the cards for all of us to be millionaires, and mighty few of the "good fellows" get into that class. It's better to earn your way first and go hunting for good times when you have reached the point where you can spare both the time and the money. Then, possibly, you'll have more sense and have a different notion about what a good time is.—*Toledo Bee.*

## WHY IS IT TWO DOLLARS?

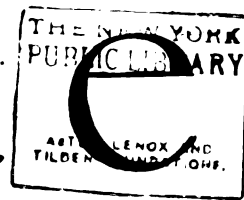
*Chat* says it thinks if statistics were taken there would be found to be more fellows who want to borrow two dollars than all the other borrowers put together.

*Chat* further says there seems to be a strange fatality following people who borrow two dollars. Of four people who borrowed that amount each met a sudden, and in two cases, a violent death.

It must be different in Jersey, for we know of several two-dollar borrowers that death seems to run away from.



# Graphite



VOL. V.

JUNE 1903.

No. 7.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

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## TWO REPRESENTATIVE AMERICANS.

Our readers will recognize at once the gentleman on the right, Mr. John A. Walker, Vice President, Treasurer and General Manager of the Dixon Company.

The gentleman on the left, Mr. Wm. Humphrey Knowles, will be recognized by only few. Mr. Knowles is a hard one to catch with a camera and we are not

of a lubricator which feeds, with great success and wonderful results, Dixon's pure flake graphite in dry form.

## THE BAROMETER OF TRADE IS GOOD.

Mr. John A. Walker, Vice-President and Treasurer of the Joseph Dixon Crucible Company, Jersey City, N. J., wrote for the *Manufacturers' Record* as follows: "The Dixon Company's industry is quite an accurate barometer of trade weather, so to speak. With lead pencils we interest every man, woman and child; with crucibles, every man in the metal-melting business; with graphite for lubricating, every firm that runs machinery; with paint, all the building community; with stove polish, all the housekeepers, and from our standpoint we are having good trade weather, and the barometer points steadily and persistently toward the good. There are, for instance, 900,000 immigrants coming into the United States every year now. Figuring five to a family, this means 180,000 families, and this means the building of 180,000 new houses, just for this one new feature of the case every year, and all the incidents belonging to the setting up of 180,000 new houses, just in this one

certain he knows of the existence of this picture. It is a snap shot at Hotel Windsor, London, during one of Mr. Walker's foreign trips.

Mr. Knowles is a good representative of the strenuous, ever busy, restless American, and a gentleman of wealth and culture. Although he has "made his pile," he is not satisfied to keep out of business harness. Because of his great personal interest in the success of Mr. George W. Wollaston, the manager of the Dixon branch in London, Mr. Knowles of his own accord found a place for himself in the London office and something to busy himself about. The work once commenced grew in interest until he found himself fascinated with the graphite business, and from putting in one and two hours work he soon found himself burning the midnight oil and working like a young man who had set out to win his spurs in business life. All this without money compensation or hope of reward. What better example could we find of a man who works for the love of his work! Mr. Knowles has further shown his aptness and fitness for his work by promoting the invention



MR. KNOWLES. MR. WALKER.

matter alone. The business pulses with us throb good, the demand is steady, and for staple goods we find that the better we make our wares and the more perfect our standard of excellence, the easier it is to sell them. It seems to us that there is at present no very serious cloud on the industrial horizon."

## IMPROVED METHODS.

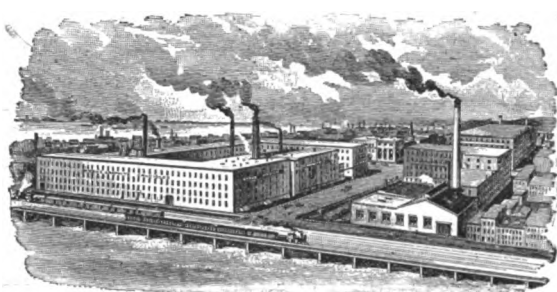
First there were Roman numerals; then came the Arabic figures. To show how one way is better than another way, and how one should hunt up all the improvements in his line, suppose you sit down and multiply XVI x XVI with these Roman numerals and then try it by multiplying 16 x 16 with Arabic figures and see which you will get done first. So there is a quick, short cut to your job. Try and find it.

—J. A. WALKER.

ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

### SALESROOMS AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Horgen (Switzerland), Finland.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., June 1903.

### DIXON GRAPHITE CREATIONS.

The fame of the Dixon Graphite Products has, like Puck's girdle, circled the globe; but not so many know their exclusively Dixon flavor. Our flag floats proudly, because the Dixon products, chiefly, are not imitations but creations.

Begin, for example, with the crucible. It was created by Joseph Dixon, and every graphite crucible made on the earth today is chiefly made after the Dixon process; but it can be truthfully said that no imitator yet has made a better one—or even as good. The graphite crucible itself, revolutionized the melting industry of the world, and all nations share its important success.

In the same way the cake stove polish changed the world's practice. Before the cake, a powder was used called British lustre; but the cake swept the mussy process of lustre away like chaff before a blower.

Likewise was it Dixon who emphasized the use of good plumbago facings for sand moulds in the iron casting process. "Any old thing" was good enough before Dixon put science in this branch of industry.

Another, and a pre-eminent success, was the adaption by Dixon of American Flake Graphite to lubrication. We are its originators and promoters. Every machine uses it. The entire circle of the machine-using nations pay us tribute. We are in front, with no second. Imitators we have had, it is true; but one following the other, they have come and disappeared. We have the field alone and we deserve it. The industry is our creation and we serve the consumer well—both in quality and in price.

As a fifth success, we point to Silica Graphite Paint. Dixon is the father of graphite paint. Here, also, we have imitators; but far and away, Dixon Co. is the only graphite paint maker with a long-time record. This creation was first made, forty years ago, from the identical flake mined from our acres at Ticonderoga. We did have pieces of tin roofing from our buildings at the mines, thirty-five years old, painted with that early product and in an elegant state of preservation after the wear and tear of thirty-five years.

Again, Dixon's Pipe-Joint Compound takes its place in the same class as another creation, and bids fair to be a most notable one. Graphite joint compound is as much better than what it supplanted and drove from the market, as a ride in a Pullman car is better than a ride in a wheelbarrow.

In Graphite Pencils we are not the first in years, though Mr. Dixon made pencils in America as far back as 1827, long before any of the present American pencil makers were born even; but today the Dixon Company, in the field of the whole world, is neck and neck in a competing race for quality of work.

In addition to the creative work done, our products have that up-to-date quality which time endorses. Our products have, as yet, never been superseded. We originated not only, but today make the best things of the kind.

The most progressive machine of the day is the automobile. The most aggressive and progressive people in existence, its friends. Instantly the vehicle is on its four wheels, Dixon originates its lubricant; and so it has been since the beginning.

Carnegie said something about finding romance in one's business. What a romance the Dixon record of seventy-six years is! Twenty blades of grass made to grow in place of one. Industry after industry revolutionized. Helped in its progress by everything we have created. Standing the test of Time. Defying imitators.

Our literature on the subject of Graphite, even though written from an advertising standpoint, is so far ahead of anything else, that dictionaries and encyclopedias are rubbish in comparison.

Dixon products are creative. Dixon products keep themselves in daily practice in the formost workshops of the great machine-using nations.—JOHN A. WALKER.

### WHY A MAN WOULD RATHER SHARPEN A WOMAN'S PENCIL THAN SEE HER DO IT HERSELF.

There seems to be no good reason why a man's way of sharpening a pencil is any better than a woman's.

It is difficult to see just why it is advisable to cover the thumb with powdered graphite and expose that useful member to possible amputation by a knife directed uncompromisingly towards it, when the pencil might be pointed the other way, the risk of amputation avoided and the shavings and powdered graphite left safely to gravitation and centrifugal force. Yet the entire race of men refuse to see the true value of the feminine method, and, indeed, any man would rather sharpen any woman's pencils than see her do it herself.

—Myrtle Reed in *The Spinster Book*.

## GRAPHITE LUBRICATION.

CHRISTIANIA, Norway, March 14.

*Editor Horseless Age:*

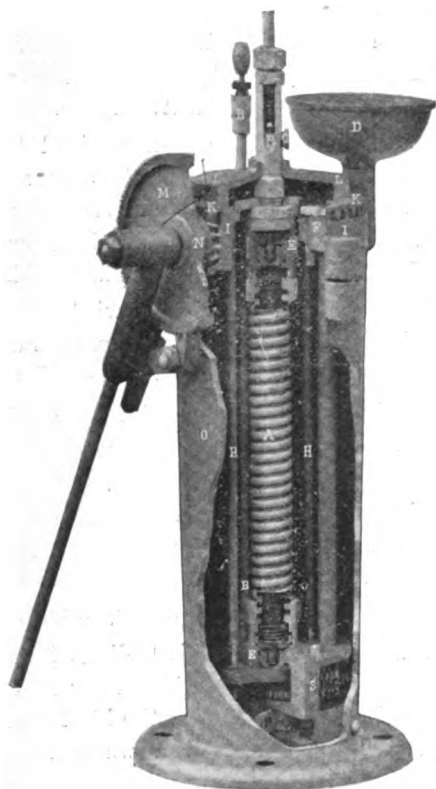
As a most interested reader of your esteemed journal I take pleasure in handing you herewith a cut of a lubricator for graphite mixed with oil, which I think would be found very satisfactory for use on automobiles, where a reliable lubricator is most appreciable.

I have run German cars and have here at present three American steam cars with their very "unsight" feed lubricators, either feeding almost no oil or emptying themselves in a few minutes.

The inclosed lubricator has been thoroughly tested by me for some six weeks and I found it to work very well. Relying on the claims of the manufacturer, I let the engine (125 horse power compound) run for fourteen days, with the lubricator on and then disconnected it entirely for the following fourteen days, and during that time the engine worked without any lubrication at all. The reason no lubrication was needed was that the graphite (Dixon's flake graphite, mixed with a cheap grade of oil was used) had filled all the pores of the cylinder walls.

I think this lubricator would do good work on heavier motors vehicles, and should be much interested to learn if any of your readers have had experience in graphite lubrication of automobile motors.

The principle of this lubricator is very simple. A corrugated tube A with valves E is caused to oscillate by turning



the plate L against the body K, thus acting as a pump without piston, and pumping the graphite suspended in the oil to the engine. A mixing propeller wheel P driven by wheels *w* serves to keep the graphite suspended in the oil. The device appears to me invaluable in saving oil and wear

on the machinery, and it also helps to tighten the boxes from the inside by filling them with graphite.

F. HIORTH.

[The mode of operation of the pump seems to be as follows: The ratchet wheel M driven from the engine by means of a pawl and link connection. In one piece with the ratchet wheel M is the bevel pinion N, which meshes with the bevel gear crown K surrounding the upper cover of the reservoir. The bevel gear crown is provided with a cam face on top (as indicated by arrows), with which engages the cam surface on the cover plate L. As the bevel gear crown K rotates the cover plate L is raised and lowered alternately, and with it the valve housing E at the lower end of the corrugated tube, which is fastened to it by the rods H H. When the lower valve casing moves downward, which it does under the elastic force of the corrugated tube, the lubricating mixture is drawn into the tube, and the valve case is forced upward by the cam surfaces on K and L, the valve at the bottom of the corrugated tube closes and the mixture is forced out of the tube to the engine through the connection P.—Ed.]—*From the Horseless Age of April 8.*

### WHAT THE CHIEF ENGINEER SAYS.



Some belt dressings are like a whip to a tired horse. They act only for the moment, they are stimulants that last only for a moment.

Dixon's Traction Belt Dressing is like good rest and care. It restores the life of a belt and keeps it soft and elastic.

Dixon's Graphite Pipe Compound is an indispensable material. We use it on all threaded pipes and on faces of flanges. The graphite enables us to make up better joints with less labor, and whenever it happens that we want to break a joint it can be done with ease, as the flake graphite never sets or hardens. It's great stuff for the engineer.

Then there is Dixon's Pure Flake Graphite, which we use in our engine cylinders. We wouldn't be without it. On one of our engines we introduce the graphite into the cylinder by means of a small hand oil-pump. When the engine is doing heavy duty, we give the cylinders a little flake graphite, and then there is sweetness and ease in the way that engine does her work. On one of the other engines we have a Hills-McCanna force feed lubricator. We have had it in use for six months feeding cylinder oil and graphite, and it does the work with great satisfaction. Good day.

### HERE YOU HAVE IT.

Sword,	.	.	.	.	Mighty.
Pen,	.	.	.	.	Mightier.
Pencil,	.	.	.	.	Mightiest.

And Dixon's American Graphite the mightiest of them all. Dixon's American Graphite pencils are made in about a thousand different styles and in over a dozen degrees of hardness.

## JOHN A. WALKER'S DINNER TO THE DIXON STAFF.

(From Geyer's "Stationer," April, 16, 1903.)

On Tuesday evening last, the Vice President and General Manager of the Dixon Crucible Co., gave his annual dinner to the members of his staff at The Arena. All residents of New York and vicinity, who love good things to eat, know this celebrated restaurant on Thirty-first street. The invitations called for the gathering at 6.30, but before that time



most of the boys were there; and, as it was a family gathering, no time was lost in getting the fun started; in fact, the fun started itself. It couldn't help starting when such choice spirits as Geo. Long, John Ready, Bishop Baird, Uncle Dud Johnson and the Saint from Kansas met for a frolic. It was 7 o'clock before all the boys ceased their fun in the café, and wended their way to the banquet room on the second floor. Mr. Walker, with the Hon. Gilbert Collins, led the way, and the guests, in pairs, hunted for the little cards on the table, which told each his place. On the right of the chairman sat Judge Collins, and on his left Mr. Andrew Geyer, while on either side were seated thirty of as bright gentlemen ("Walker boys" they call themselves) as can be found in the country; men who, in the various positions they occupy, have won their spurs; and, having won them, work hard to keep them bright, for no laggard can long hold his place on the Dixon staff. Glancing down the row of happy faces, it was astonishing to note how young the staff were. Hardly a head was streaked with gray.

When coffee and cigars were reached, Mr. Walker called the assemblage to order and read the following lines which were on the menu:

This night I hold an old accustomed feast,  
Whereto I have invited many a guest,  
Such as I love; and you among the store,  
One more, most welcome, makes my number more.

In a few well-chosen words Mr. Walker greeted his friends, and then called upon his cherished friend, Judge Collins, to talk to the boys. The Judge was no stranger to most of the guests, and his remarks found a hearty response in the hearts of his hearers. Mr. Geyer is also well known to most of those who were present, and his few remarks were well received. Then the boys had the floor, and, as the chairman introduced each member with some witty remark,

which all present understood and appreciated, the laugh rang out loud and clear. The spirit of each speech showed the love and respect every one of the boys held for his chief. They showed a feeling of entire confidence that each and every one present could go to Mr. Walker and be sure of sympathy and advice at any time. They also showed appreciation of the fact that the great success which had attended the company was due to the personal interest the chief takes in every member of the staff, and recognized his rare faculty of imparting to them his own confidence, that they could do well the part they had to fill in the work of the Dixon Company. Mr. Geo. Heredia, the Company's representative in Havana, was a most interested listener. It was his first introduction to the staff, and he enjoyed the evening immensely. During the evening, letters from several of the absent boys were read, and a telegram from Sam Mayer was received.

When all the guests had spoken, Mr. Walker called for three cheers for the absent ones, calling each by name, and, as he declared the dinner adjourned, the guests struck up

"Oh, he's a jolly good fellow."

So came to an end one of the most enjoyable evenings that has ever been spent in this great city—one that will linger long in memory and be often recalled by those present.

-----  
*By Mr. Nealley, of the Dixon Staff.*

On the evening of April 14, 1903, members of the Joseph Dixon Crucible Company's staff were royally entertained at dinner in the college room of The Arena, 41 West Thirty-first street, New York City, by their Vice President and General Manager, the Hon. John A. Walker.

Letters and dispatches of regret, received from Dixon men who were unable to be present, were read by Mr. Harry Dailey. The occasion was enlivened by strains of sweet music, and during the courses the peculiarly soft notes of a zither filled the air with quaint melodies.

With well chosen words of wit and wisdom, Mr. Walker cordially presided, making the evening one of rare pleasure, such as is only known to those who have enjoyed his hospitality. In his speech Mr. Walker quoted the following lines which appeared on the unique menu cards above his autograph:

This night I hold an old accustomed feast,  
Whereto I have invited many a guest,  
Such as I love; and you among the store,  
One more, most welcome, makes my number more.

The lines, he said, expressed his feelings for those present. The speeches that followed, filled as they were with words of appreciation, showed that the kind sentiments expressed by Mr. Walker received a warm response from those about him.

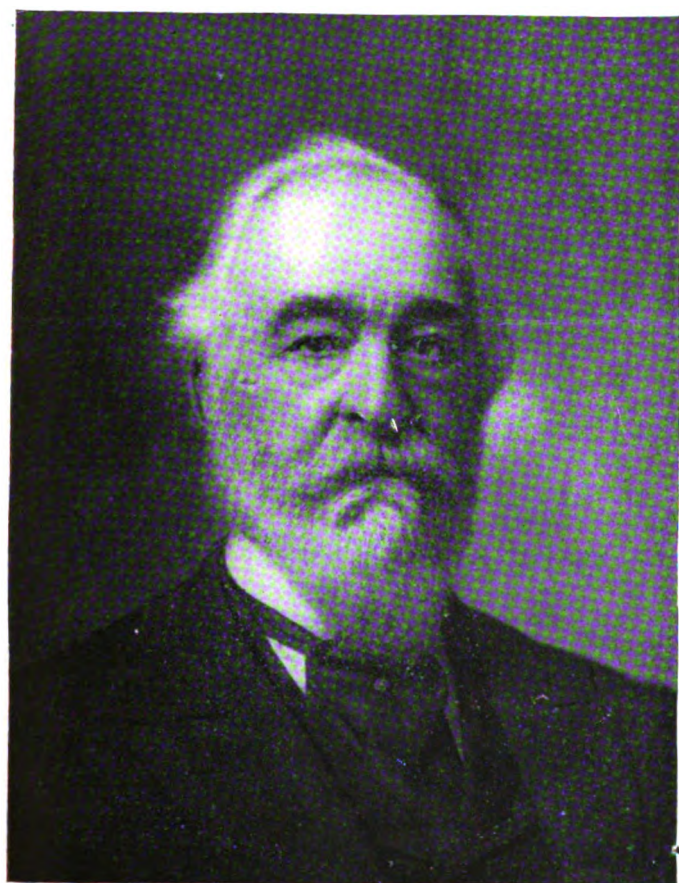
Among the speakers were Judge Collins, Mr. Geyer and Mr. Long, the former gentlemen having been invited to meet the Dixon staff. Many others also made interesting remarks, and soon came the closing hour of an evening the recollection of which will warm the cockles of the heart of every guest.



### HON. MOSES SWEETSER.

Through the courtesy of the Wisdom Publishing Company, Boston, we are permitted to reproduce from *Wisdom* a very fine picture and a most excellent sketch of the Hon. Moses Sweetser, of whom our Vice President, Mr. J. A. Walker, so lovingly wrote in *GRAPHITE* for April.

Hon. Moses Sweetser, octogenarian and personal friend of Blaine and McKinley, now living in honored retirement in Lynn, has had a singularly strenuous and eventful public career, brought into prominence anew as the anniversary of President Lincoln's death approaches. Mr. Sweetser married Elizabeth D. Foster, of Andover, in 1847, and this lady, now passed beyond, was an eye witness, from her seat in the first balcony of Ford's Theatre, of the assassination, by J. Wilkes Booth, of President Lincoln. The president recognized and saluted Mrs. Sweetser as they met at the door of the dress circle, when the president and his party were on their way to the specially-draped box prepared for them. The Sweetsters, at that time, lived on Tenth street in Wash-



ington. In 1863 he was captured by Gen. Fitzhugh Lee, but was chivalrously released by the Confederate general because of Mr. Sweetser's having previously taken the part of a Confederate lady, whom a brutal provost marshall had declared should walk as his prisoner the fifteen miles between Fairfax Court House and Washington. Gen. Lee also made his soldiers return Mr. Sweetser's gold watch, taken from him at the time of his capture. Mr. Sweetser was one of the pioneer vessel owners venturing around the Horn to the California gold fields, his brig "Anna," in 1849-50, making the trip with 34 passengers in 158 days—then considered rapid sailing. In 1865, shortly after an-

other exciting capture by Moseby, the guerilla general, while conveying supplies to the Union Army at Warrenton, Va., he entered partnership in the "Chronicle Farm Agency," selling lands in all parts of the South with Col. J. W. Forney, owner of the *Philadelphia Press* and *Washington Chronicle*. Later he was prominent in the oil region development in West Virginia, originating the famous oil-pipe lines which revolutionized the transportation of oil and proved of immense commercial value. His first pipe line was from Volcano to Petroleum, W. Va., inclined downward the entire distance. His son, Moses Foster Sweetser, who died in 1897, was a writer of several books and a biographer and historian of rare promise, and for a time assistant editor of the famous *Atlantic Monthly*.

### LAND ON YOUR FEET.

You take a cat up by the tail  
And whirl him round and round,  
And hurl him out into the air—  
Out into space profound,  
He through the yielding atmosphere  
Will many a whirl complete;  
But, when he strikes upon the ground,  
He'll land upon his feet.

Fate takes a man just like a cat  
And, with more force than grace,  
It whirls him wiggling round and round  
And hurls him into space.  
And, those that fall upon the back  
Or land upon the head,  
Fate let's them lie there, where they fall;  
They're just as good as dead.

But some there be that, like the cat,  
Whirl round and round and round,  
And go gyrating off through space,  
Until they strike the ground;  
But when, at last, the ground and they  
Do really come to meet,  
You'll always find them right side up:  
They land upon their feet.

And such a man walks off erect,  
Triumphant and elate,  
And, with a courage in his heart,  
He shakes his fist at Fate;  
Then Fate, with a benignant smile  
Upon its face outspread,  
Puts forth its soft, caressing hand  
And pats him on the head.

And he's Fate's darling from that day;  
His triumph is complete.  
Fate loves the man who whirls and whirls,  
But lands upon his feet.  
That man, whate'er his ups and downs,  
Is never wholly spurned,  
Whose perpendicularity  
Is never overturned.

—Sam Walter Foss in *Journal of Education*.

**EDWARD F. C. YOUNG.**

President Joseph Dixon Crucible Co.

Edward F. C. Young's life is inseparably associated with the life and progress of Jersey City. Beginning as a poor boy, he has, by his own efforts, become one of Jersey City's foremost citizens. Mr. Young's ancestors, on the paternal side, were English, and the first one to settle in this country was the Rev. John Young, who emigrated to Connecticut



in 1638, and in 1640 crossed Long Island Sound and made his home in Southold, N. Y. On the maternal side the grandparents of Mr. Young were Scotch.

Edward F. C. Young was born in Morris county, N. J., in 1835. In 1844 he moved to this city, and he has been a resident of Jersey City ever since. He attended old No. 1 School, under Principal George H. Linsley. In 1852 he began his business career as clerk in the Hudson County National Bank. In 1853 he was made receiving teller, and in 1858 paying teller. During 1856 he held the office of Collector of Assessments.

In June, 1864, he was called to the Mechanics' & Traders' Bank, and January 2, 1865, Mr. Young was made assistant cashier of the First National Bank, the two banks being consolidated about that time. From 1865 to 1870, Mr. Young was City Treasurer.

In 1873 he was elected Alderman from the strongly Republican Fifth Ward.

In 1874 and 1875 he was elected Freeholder, and in 1876 he became the first Director-at-Large of the Board.

Mr. Young was made cashier of the First National Bank in 1874, and since 1879 he has been its president. He has seen the bank grow steadily in importance, until today the gross deposits are over \$7,230,000, while the surplus is over \$1,023,414.

In 1880 he was an elector on the Democratic ticket and cast his vote for Gen. W. S. Hancock in the Electoral College.

Mr. Young's name is prominently connected with the history of the trolley development in New Jersey. He helped to organize the Consolidated Traction Company, which took over the property of the old Jersey City and Bergen Railroad Company and substituted electricity for horse power. Later on he became president of the North Jersey Street Railway Company, which leased the Consolidated Traction Company and is now operating the trolley lines south of Newark avenue in Hudson County and most

of the trolley lines in Essex County. Mr. Young also helped to develop the Jersey City, Hoboken and Paterson Street Railway Company, which operates lines between here and Paterson, and he is a leading official in the Bergen Turnpike Company, which has started the trolley line between Hoboken and Hackensack. Mr. Young is likewise president of the Hudson County Gas Company, the Dixon Crucible Company, and he is director and second vice president of the United Electric Company. Here are some of the other institutions in which Mr. Young is prominent: New Jersey Title Guarantee and Trust Company, A. A. Griffing Iron Company, Trust Company of New Jersey, Acker Process Company, American Graphite Company, Bowling Green Trust Company, Cleveland Seed Company, Coaldale Mining Company, Colonial Life Insurance Company, Distilling Company of America; Elizabeth, Plainfield and Central Jersey Railway Company, International Steam Pump Company, West Hudson County Trust Company, Bayonne Trust Company, Pavonia Trust Company, Kentucky Distilleries and Warehouse Company, Liberty National Bank, National Exhibition Company, North Jersey Land Company, Produce Exchange Trust Company, Severy Process Company, The Standard Distilling and Distributing Company and Trust Company of New Jersey.

—*Evening Journal*, March 21, 1903.



"The proof of the preaching is in eating the preacher."  
"Don't cry over spilled milk, crack another cocoanut."

**HOW TO SHARPEN A LEAD PENCIL.**

There is but one way to sharpen a lead pencil, and that is to grasp it firmly with the point from you. Take your knife in the other hand and whittle away as though you had lots of pencils to waste. By following these directions and turning the pencil over, you will soon have it neatly and regularly sharpened, and your fingers will not be soiled or cut. It is no economy to use cheap or poor pencils. Use the best.



## THE GREAT SHIP MINNESOTA.

**A Ship That Will Carry a Cargo That Would Fill a Railroad Train Seven Miles Long; or Two Thousand Five Hundred Freight Cars.**

The Eastern Shipbuilding Company, a constituent of the United States Shipbuilding Company, presented a magnificent scene at its yard on the sixteenth of last April when occurred the launching of the Minnesota, the largest vessel ever built in America and the greatest cargo carrier in the world.

Thousands of people, including many from the West, went to New London, Conn., to see the launching. The sponsor of the big ship was Miss Clara Hill, daughter of J. J. Hill, President of the Great Northern Steamship Company for which the vessel was built, to become part of the company's Pacific and Oriental carrying service. As the mammoth hull began to move Miss Hill broke a bottle of champagne over the bow and named the ship the Minnesota.

It was indeed inspiring to see this craft leave her cradle in the ship yard; gliding onward to the Thames River, the immense weight causing the ways to send up dense clouds of smoke, a burning incense for a benediction which well might win the approbation of old Neptune.

Immediately after the launching luncheon was served in the mould loft. The designer and builder of the vessel, Charles Ridgely Hanscom, presided and in the speech that followed well merited words of praise and congratulation were showered upon him. Mr. Hill made a strong speech, a small part of which we quote as follows: "In railway transportation we lead the world," said he. "In the United Kingdom it costs \$2.30 to ship a ton of freight 100 miles; in Germany, \$2.00; in France, \$1.75; in Russia, \$1.30; whereas the average for the United States is only 72 cents. But in steamship transportation we are children. Today any old tramp steamer of any nation that spies an American vessel putting into a harbor with a bundle of freight, will shout 'Drop that bundle' and immediately the bundle drops. With that great vessel out there riding at anchor I don't want to be told to drop any bundle. Moreover, I now give notice to all comers that I will not drop it."

After the luncheon President Hill took his grandson, James Hill, a bright-eyed boy of ten years, to the rear of the mould loft where hung a model of the Minnesota in polished wood. He quickly described some of the interesting features and then took the boy to a window which commanded a good view of the enormous vessel as she floated proudly on the Thames bright with flags, which gave a touch of color above the substantial natural shade of Dixon's Silica-Graphite Paint which protects the ponderous hull of steel.

A description of the Minnesota appeared in the April number of GRAPHITE. It is interesting to know that the vessel will carry a cargo that would fill a railroad train seven miles long or 125 trains of twenty cars each.

A representative of the Joseph Dixon Crucible Company who attended the launching, enjoyed the return trip to New York on President J. J. Hill's special train, which shot over the rails in something more than a mile a minute.

The pipe of peace—the one put together with Dixon's Graphite Pipe Compound.

## "STICTION" AND "FRICTION."

We are told that the laws of friction are few and simple, and may be divided into two classes—static and dynamic.

The first deals with the friction of rest and is given by some the not inappropriate name of "stiction." Belts and friction clutches come under this heading.

The second deals with the friction of motion. The motion of friction between two surfaces sliding together depends upon several things—the pressure applied to them, the material of the surface, their smoothness and hardness, their wetness and dryness, etc.

To reduce friction to its lowest degree, the surfaces must be as smooth as possible, and at least one of them should be capable of the highest polish.

In other words, for the smooth and easy running of parts and for freedom from friction, the surfaces must be smooth and glossy.

The engineer who reads, thinks and observes, is soon well aware that there is no material equal to Dixon's Flake Graphite for giving a polish to the friction surfaces.

Dixon's Flake Graphite is especially valuable in cylinder lubrication. Friction on the cylinder walls and piston is reduced, the surfaces are highly polished, tighter joints may be made and all friction reduced to a minimum. This means less steam and an economy in the consumption of coal.

The engine runs smoother and easier and lasts longer; the packings are tighter and do not have to be removed so often; repairs and stoppages are reduced; in short, the advantages of graphite lubrication are unbounded.

The addition of say five per cent. flake graphite to the cylinder oil means that only one-third as much oil will be used as formerly, and the oil may be of a poorer quality than has been used before, which means sixty to seventy per cent. of the oil will be saved.

For new engines with rough cylinder surfaces, graphite cannot be too highly recommended. In a short time, through its use, a polish is produced that, under the old method, would take months to accomplish.

Dixon's Flake Graphite is indestructible and, therefore, will not be affected by superheated steam. The engineer who makes use of Dixon's Flake Graphite may rest assured that he is using a graphite free from impurities and that no injury will come to his machinery.

## LINOTYPE TESTIMONIAL.

A linotype operator writes us as follows:

I was greatly pleased with the sample of Dixon's Special Graphite No. 635, oiled, that you sent me. I used it on new machines, and if ever graphite is needed, it is needed on the linotype when the machine is first started. I used graphite on the space-bands constantly, and through them enough was carried into the machine and even the magazine, so that the matrices never failed to drop and the machine worked the best of any I ever operated.

Whether the oiled graphite is better than the dry graphite for machines, it is hard to say; but it certainly goes much further than the dry, which I presume is on account of its being dampened with oil.

I used the graphite to polish mold, on mold-wiper, cams

and, in fact, wherever and whenever there was friction, and where oil would not do.

Some time ago, I was in a newspaper office and I found the space-bands covered with rust, and they looked as if they had stood in water for a week; but I found a small can of dry graphite in the office (probably it was your make) and soon had that machine going in fine shape.

The concern I am now with has two machines which I have the care of, and we have Dixon's dry graphite in use now. As soon as we are out we shall order more—probably will try the oiled kind.

### DIXON'S GRAPHITED WOOD GREASE.

**For Trolley Cars. Prevents Wear and Noise. Keeps Gears and Bearings Well Lubricated. Prevents All Drippings from Gear Cases. Lasts Longer and Is More Economical Than Any Other Lubricant.**



The use of Dixon's Graphited Wood Grease in connection with the lubrication of fast running enclosed gears is warranted by the following results:

In a very short time after the Graphited Wood

Grease is applied, it loses its granular character and assumes a peculiar tough, spongy consistency, very adhesive and of excellent body. This body is due to the fibre of the wood, which is now in a very fine condition.

The fibre is sufficient to keep the surfaces of the gears from coming in contact, and so prevents all noise which usually accompanies the use and wear of gears. The use of Dixon's Graphited Wood Grease makes unnecessary the expense of raw hide pinions.

The fibre being soft does not wear the surfaces of gears, as each particular fibre becomes well coated with Dixon's pure flake graphite.

The method of application is ordinarily to put enough inside the gear cases, so that one of the gears may drag through it. Employed in this way, the grease is exceedingly durable, and reduces the labor of application to a minimum.

The use of this grease insures economy and better lubrication.

### HIS HOME-COMING.

Mr. George A. Wollaston, manager of the London branch of the Dixon Company, is expected to pay the home office a visit sometime during this summer.

He comes to find room to stretch his legs and to come into personal touch with the factory atmosphere.

THE PROFESSOR.—Humph! Dear me! I gave that young man two courses on the cultivation of the memory, and he's gone away and forgot to pay me, and I can't for the life of me remember the fellow's name. How very provoking!

—*New York Sun.*

## Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, type-writer work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing.**

**Dixon's Plumbago for Powder Glazing.**

**Dixon's Plumbago Foundry Facings.**

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite.**

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Cycle Chain Graphites**, for perfectly lubricating chains and gears of bicycles.

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Anti-Flux Brazing Graphite**, to prevent the spelter from adhering when brazing.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians.**

Special circulars with detailed information sent on request.

# Graphite

THE NEW YORK  
PUBLIC LIBRARY  
ASTOR, LENOX AND  
TILDEN FOUNDATIONS.

VOL. V.

JULY 1903.

No. 8.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

COPYRIGHTED 1903 BY THE JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.

## "PICK-ME-UP-UPS" FOR THE SALESMAN.

FROM PICCOLO.

In order to do good work on others, a salesman's own physical and mental condition must be good, and his first effort, *every morning*, should be to place himself in the right attitude of mind before he begins work.

Every salesmen of experience *knows* that he has had days when everything seemed bright, and everybody wanted to buy from him; but *does he realize* that the secret lay largely in his own condition, and not so much in that of others?

A salesman must compel himself to hold certain opinions and to determinedly sustain them. He must be absolutely firm in his belief:

1st. That his employers are men of unquestionable integrity, men of judgment, capable buyers, and understand their business.

2nd. That, as a whole, his house is the best in the country, and he is proud to represent it.

3rd. That his goods are what the trade wants and ought to have, and it is a pleasure to offer them.

4th. That the prices given him are fair, and as low as they should be, with justice to his house.

5th. That he is not afraid to ask the price given him, for the goods are worth the money.

6th. That his customers are anxious too see him.

7th. That he expects to sell every man he calls upon, and that his customers want to buy *now*.

8th. That he does not fear competition.

9th. That he will *work*.

10th. That he is "*it*", and everybody knows it.

A salesman should remember that if he does not sell goods, no matter what explanations he may offer, his house cannot afford to keep him. He is not employed to make explanations, but to secure orders.

A salesman should understand that his house does not employ him to sell his competitors' goods: that his real duty is to find the advantages in *his own goods*, and to present them to the trade in the most thorough and skillful manner.

A salesman who is always asking his house to get him the "other fellow's" goods to sell is giving a sure indication of poor ability.

A salesman has all he can do when he gives strict conscientious attention to his own goods, without giving time and attention to the goods of his competitors.

A salesman, in conversation with his trade, should never criticise a competitor's goods, for he is also criticising the judgment of the man who has bought them, and he risks the loss of the buyer's friendship by making unfavorable comment.

A salesman should remember that his house pays something for its goods, and that it is a very close proposition to make adequate profits even under the best conditions.

A salesman should:

1st. Obey instructions—intelligently—not like a school-boy.

2nd. Not write too many letters.

3rd. Make his correspondence brief and to the point.

4th. Never attempt to cover the case of every customer and condition in one letter.

5th. Write nothing on the order sheet that does not pertain to the order thereon. *Paper is cheap.*

6th. Write about each separate matter on a separate sheet of paper; it saves time and prevents confusion in the house.

7th. Give strict and careful attention to all price-lists, circulars, and other information mailed him by his house. Carelessness in this respect often causes a salesman to miss trade.

## THE VALUE OF QUALITY.

A dealer in Dixon's American Graphite Pencils writes us: "People here are learning to like good goods."

It has been the policy of the Dixon Company to make the best goods possible—to spare no expense in material or workmanship, believing the greatest economy to be in goods of the highest quality. A pencil stamped "Dixon's American Graphite" costs but a trifle more than a common, cheap pencil. It will, however, last many times longer, to say nothing of the greater satisfaction it gives.

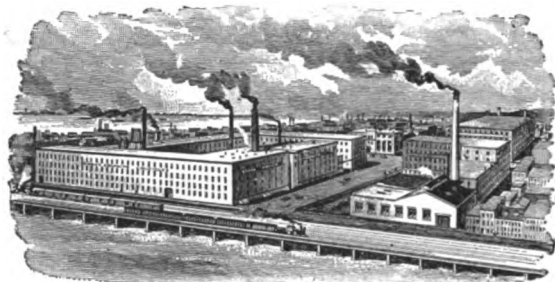
OUR READERS will note that this issue of GRAPHITE contains several articles on the subject of graphite lubrication that are of special interest.

The demand for lubrication better than oil alone can give brings graphite rapidly to the front for the reason that it produces a surface that for smoothness and cool running is unequalled.

ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J., U. S. A.

### SALESROOMS AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Horgen (Switzerland), Finland.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary

JERSEY CITY, N. J., July 1903.

### PEOPLE THAT WE LIKE.

The Dixon Company has a special affection for the following buyers:

Those that do not pay their bills when due and that need to be reminded a half dozen times by letter or statement.

Those that take no notice of such correspondence, that do not answer letters. We send them a statement, no reply; a letter calling attention to it, no reply; a draft goes out and comes back unpaid, and in a subsequent letter we ask why, and no answer. These are the people that we like.

After three or four such efforts have been made to collect a bill, another draft is sent and the draft comes back unpaid, marked on the back: "We never pay drafts." This fellow is a special favorite. Under some circumstances, the man says, he would pay the draft, but it was drawn with exchange. He ignores the fact that it is commercial practice all over the globe to pay the seller in money of his own bailiwick. We like a man that differs from all the world.

We always like the people too, that find something short in their package. One man only finds 5 dozen pencils in a 6 dozen package, and another fellow to whom 10 gross is sent, a one-dozen box short.

There are not many of these people, it is true, but that is what makes us like them all the more. We always like what is rare and what differs from the average, and these fellows that do not pay and do not answer letters and kick because a draft is drawn, or payable with exchange, are objects of our special regard and respect.

—JOHN A. WALKER.

## DIXON'S GRAPHITE COMPOUND IN RAILWAY SERVICE.

From a letter received from a master mechanic connected with one of the prominent railway companies, we reproduce the following:

"Referring to Dixon's Graphite Pipe Joint Compound would say that we have used it on pipe connections, steam joints, such as steam chests, cylinder heads, doors of front ends of locomotives, etc., and we think it superior to any thing that we ever used for making joints."

### I CAN'T.

The other evening, uptown in New York, a game of billiards was played between one of the keenest experts and a man without hands. He had somewhere met with an accident and lost his hands, and, curiously enough, chose billiard playing as a fad. The score was: Expert, 300; Handless Man, 203; and yet, when some little difficulty comes in your way or mine, we say so easily, "I can't." Let the handless billiard player teach us that we can do almost anything.

—J. A. WALKER.

### LIVELY AMERICANS.

Ian MacLaren recently wrote of Americans: "No man goes slow if he has the chance of going fast; no man stops to talk if he can talk walking; no man walks if he can ride in a trolley car; no one goes in a trolley car if he can get a convenient steam car; and bye-and-bye no one will go in a steam car if he can be shot through a pneumatic tube; there is nothing an American cannot do, except rest."

If the above genial writer had been at the Dixon dinner given by our "busy boss," he would have been doubly assured of his impressions. The members of the Dixon staff were there on time. Disposed of all matters quickly and thoroughly, and were home and asleep long before the "wee sma' hours."

### LINOTYPE MACHINES.

The Prevention of Hair Lines.

We have a letter from Mr. Charles L. Stowe, Jr., Operator Machinist of *The Shreveport Journal*, Shreveport, La., in which he writes as follows:—

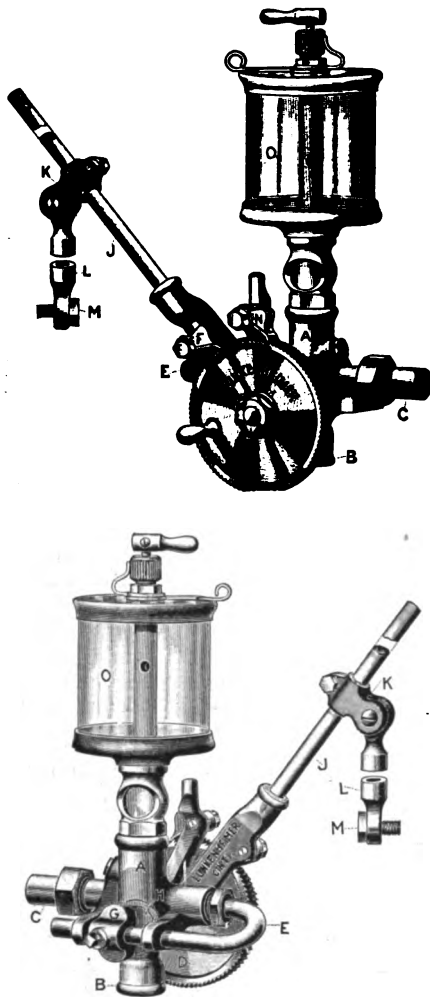
"Your Graphite No. 635 (ground in oil) has proven satisfactory in every sense of the word, and a supply will be constantly kept on hand. As a lubricant for space-bands it is 'par excellence,' and by methodical use will prevent the occurrence of the hair-lines that are the most destructive agency as regards matrices. The use of this grade of graphite on the felt mold-wiper also prevents metal from adhering to the face of the mold, and it is also very beneficial when rubbed on the mouth-piece, preventing metal from adhering to same. It is also useful as a lubricant on the first elevator jaws, allowing matrices to enter without friction, and permits free action, without wear, when rubbed on the upper portion of the second elevator bar."

THE BOSTON WAY.—Individuals inhabiting domiciles of crystalline structure should refrain from projecting missiles of granite formation.

### LUNKENHEIMER MECHANICAL OIL PUMP.

Owing to the increasing demand for positive, mechanically operated lubricators, we have placed on the market the mechanical oil pump illustrated below, which is the result of considerable investigation and experimenting, with a view of developing a satisfactory lubricator of this sort.

Mechanical oil pumps, when properly constructed, are more reliable than hydrostatically operated lubricators, for the reason that the oiling is absolutely positive, and all of the oil fed to the pump is bound to be forced to the steam chest or cylinder of the engine.



Referring to the illustration, it will be seen that the driving mechanism is not of the ratchet type, but is operated by friction rolls bearing against the inner periphery of the drum (D), wedging between it and the inclined surfaces of the plate (F). This motion is communicated to the piston (E) through the Scotch yoke mechanism (G) and (H). The rod (J) which moves the drum (D) has loose couplings (K and M), which can be attached to the eccentric rods or other moving parts of the engine, and, by moving the part (K) up or down the rod, the stroke of the pump can be lengthened or shortened, as desired. This gives a regulation of the amount of oil fed to the pump independent of the feed from the oil cup. The bottom of the pump (B) is tapped pipe thread to receive a stand, so that it can be placed wherever desired.

Unlike other pumps, the Lunkenhimer Mechanical Pump is fitted with check valves so that it cannot flood and waste

oil. The outlet (C) is piped to the steam pipe or chest of the engine, and the check valve (X) should be placed as near the end of the pipe as possible, preferably into the steam pipe.

All parts about this pump are very substantially constructed, the workmanship is first class, and, as the parts are made to jigs and templates, they can all be easily renewed, as they are perfectly interchangeable. The Lunkenhimer pump has no equal as regards simplicity and positiveness of operation. Each pump is carefully tested before shipment and satisfaction guaranteed.

### THE PENCIL VS. THE PEN.

At the present time, when events are so rapidly transpiring, no man, woman or youth can feel himself equipped for the day without a lead pencil. A lead pencil is as indispensable to a man as a jack-knife, and as necessary to a woman as a hairpin.

There are many people who give no particular attention to the pencil they are using. The lead may crumble, break or be full of grit. They may cut their fingers in trying to cut the cross-grained wood, and they may be obliged to wet the lead with their tongues at every other word they write. Those, however, who profit by past experiences, are as careful in selecting a pencil as they are in fitting themselves with a hat or a pair of shoes.

We are the advocates of good lead pencils, and we believe it is conceded by all, that in the long run the best is the cheapest.

For this reason we most strongly recommend Dixon's American Graphite Pencils. They are made in many degrees of hardness, and it is a positive pleasure to use them.

For those who want a pencil equally serviceable for copying or general use, we recommend the new pencil, "Dixon's Eterno."

### GRAPHITE LUBRICATION IN A COTTON COUNTRY.

#### Pranks Played By Constructing Engineers.

We have received an interesting letter from a firm of constructing engineers. They write:

"Your pamphlets on graphite lubrication came duly to hand and we thank you for them. The use of Dixon's Flake Graphite, as we said before, is not new to us. If you could know some of the pranks that we sometimes play, you would laugh. To illustrate:—We are sometimes called to a cotton-gin plant. We find it completely gummed up with poor oil, doing no work and straining itself to death. Under one pretext or another, we send all the hands out and then give every point of friction a dose of flake graphite before the hands come back. When they start up you can then imagine their surprise. We regard Dixon's Flake Graphite as a key-note to country engineering, and we have been the cause of having many a pound of it used.

"One point of our experience in its use that may be of interest to you is, that in the use of a steam direct cotton press, the use of flake graphite will enable a press with 100 pounds steam pressure to put a 700 pound bale of cotton into the same number of cubic inches that the same press with the same number of pounds steam pressure will put a 460 pound bale into with oil only."

### LUBRICATION IN X-LIGHT.

Mr. William Rollins in his "Notes on X-Light", in *Electrical Review* of April 4, says:

"I have shown why an X-light tube should be heated during exhaustion. The pump also requires heating, but on looking up the literature I found that the idea was not original, having been advanced by Rood years ago, therefore it was not considered in my notes on pumping. However, as I have not yet seen any one who is now using a hot pump, I mention the matter and describe a method of lubricating the stop-cocks, for it will be found on trial that none of the materials in use will answer. All seals must be mercury. The best lubricant I have yet found after a considerable search among inorganic materials is graphite, of the fineness used by electrotypers."

### EIGHTEEN MOVES FOR A NICKEL.

- 1—Car—a trolley.
- 2—Passenger—a lady.
- 3—Conductor—a man.
- 4—She opens her bag.
- 5—She takes out her purse.
- 6—She shuts up the bag.
- 7—She opens the purse.
- 8—She takes out a quarter.
- 9—She shuts the purse.
- 10—She hands conductor the quarter.
- 11—He returns the change.
- 12—He rings it up.
- 13—She opens the purse.
- 14—She puts in the change.
- 15—She shuts the purse.
- 16—She opens the bag.
- 17—She puts in the purse.
- 18—She shuts up the bag. All this for a nickel.

—SAM MAYER.

### SOME SELECTIONS BY OUR MR. WALKER FROM "LETTERS OF A SELF-MADE MAN TO HIS SON."

Education is about the only thing lying around loose in this world. Everything else is screwed down tight, and the screwdriver is lost.

He was out of a job and took to writing articles on "Why Young Men Fail," because failing was the one topic on which he was experienced.

Few men work up to be buyers in a big house through giving up their office hours to listening to funny stories. A good buyer is more pleased with  $\frac{1}{8}$  of 1% off than the funniest story out.

The man who invests in a better knowledge of his business to hold his job, is accumulating capital to buy a mortgage on quick promotion.

So far you promise to make a fair, ordinary salesman in the retail trade, but I want to see you grow into a carload man.

A man has got to lose more than money to "go broke."

There is no alarm clock in the world like an early rising manager, and nothing breeds work in a concern like a busy boss.

Send each of your salesmen a letter every day and insist on a reply every day. When a salesman has to write every day he uses up his foolish explanations very soon, and soon gets down to sensible business.

### USE OF GRAPHITE.

(From "Power," for April, 1903.)

I read with much interest the article on page 28 of the January issue, and the one on page 90 of the February issue of *Power*, on the use of graphite.

My experience with graphite is much the same as described in the January issue, and I do not see how anyone could have had the difficulty the writer in the February issue had, unless he used an inferior or impure article.

I have only used the best grade, in connection with oil, in engine and pump cylinders and on all engine bearings, and have not found a place where it failed to reduce friction, improve the bearing surfaces and reduce the quantity of oil required. When used in engine and pump cylinders, it reduces, on an average, the quantity of oil required by one-third.

In one case we had a valve in an automatic high-speed engine, which would not run quietly with less than a pint of 600-degree cylinder oil every two hours which, with the use of one-third of an ounce of graphite every six hours, would run quietly with a pint of the same oil every eight hours; and the difference in the sound the eccentric made, showed that it took less power to work it.

In general practice, I find a pound of graphite costing 20 cents, will save three or four gallons of cylinder oil costing 65 cents per gallon.

The cup I use to feed it is made as follows: Take a  $\frac{1}{4}$ -inch nipple and screw it into a vertical outlet above the throttle. On this nipple screw a  $\frac{1}{4}$ -inch valve; into the valve another  $\frac{1}{4}$ -inch nipple; on this nipple a  $\frac{3}{4}$ - $\frac{1}{4}$  reducing socket; into socket a  $3\frac{3}{4}$ -inch nipple with the upper end cut off squarely; then take a common  $\frac{3}{4}$  cap, put a piece of lead in the top, and the cup is ready for use.

If it is necessary to use a horizontal pipe in connecting it, the horizontal one would better be larger than  $\frac{1}{4}$ -inch, and an angle valve better than a globe valve.

This cup will hold about one-third of an ounce, and for a 50 horse-power engine should be filled about every twelve hours, and the valve opened about a quarter of a turn.

I have used graphite with grease—mixed about one part graphite and three parts grease—on the suspension pin of the Rites governor with very good results.

I find it to be good to use on rheostat brushes and switch blades, with just enough oil or grease with it to make it stick.

—WALTER S. GRISCOM.

### A USER OF DIXON'S CRUCIBLES FOR OVER HALF A CENTURY.

A request comes to us from Canada for a copy of our pamphlet on the making and using of crucibles, and the writer adds: "I have used Dixon's Crucibles since 1850, and have found them reliable and satisfactory."

EXPERIENCE is a good teacher, but it charges like a specialist.—*Hotel Life*.



## REPORTS FROM "SUNNY SAN JUAN."

Relative to the Mississippi and Missouri Trade.

Usually "Sunny San Juan" is at high pressure as an optimist and is seldom chased by any calamity spooks, but at the present time his route has lain through towns where strikes, lock-outs, cyclones, floods and wash-outs have been in full force, and where thousands of houseless and homeless people and ruined crops and delayed roundabout transportation have been his portion.

A man less earnest and energetic would probably have plunged into the flood and been washed away, but "Sunny San Juan", while pretty well discouraged, yet is able to climb upon some of the ruins and talk in his usual interesting and vigorous manner.

As matters look now, trade throughout the Mississippi and Missouri valleys is at a standstill and, as Mr. St. John puts it, "Mr. Prosperity has mounted his cayuse and lit out to better pastures."

In the latter part of Mr. St. John's report he ceases his howling about calamities and says:

"Thanks to our great momentum, thanks to our big construction contracts, thanks to thousand million good things in sight, Old Humidity with his cyclonic hosts can only hold us up and take his toll, and when he is through we shall set our pace a little swifter than before, and we will thank old Greely and a few of our other economic fathers that we have manufacturing, agricultural, mining and commercial interests to sustain us."

## GRAPHITE FOR THE FACTORY POWER PLANT.

An Interesting Letter from Mr. Frederick Keppy, Chief Engineer of the Bridgeport Brass Co., Bridgeport, Conn.

"We use large quantities of Dixon's Flake Graphite on all of our engines and about everything that goes on both plants. We find it a most excellent lubricant. On our hydraulic machinery we drop it from the can into the water tanks which supply our hydraulic pumps; it fills the bill and saves the packing on our rams. We have graphite hand pumps on all of our engines, but one of them is an old Wheelock whose valves are completely worn out and past repair, which we expected to go to pieces two or three years ago, and she is running to-day—graphite does the business. We give it to her in heroic doses every twenty minutes. The valve and valve seats three years ago were in very bad condition, all cut; to-day they are as smooth as glass. We have been able to keep this engine going until we get a chance to put in a new one which we have on hand waiting.

"The average engineer knows little about graphite as a lubricant and in the opinion of the writer he does not care to know anything about it; it would have to be beat into him. I find this difficulty among my assistants here.

"I use the Lunkenheimer Graphite Pump and find it the best. We have been trying samples of graphite cylinder oil without success; our lubricators will not feed it; presume you have experienced the same difficulty."

(We have written our old-time friend, Mr. Keppy, that we have been using a graphited oil of our own make in the Hills-McCanna Force Feed Lubricator, and with perfect success and a large saving.)

## USE OF GRAPHITE.

The reader of "Engine Room Notes" in January *Power* and "Cylinder Lubrication—Use of Graphite," in February *Power*, might well exclaim, "Too many Johnsons," especially if he is trying to settle his own mind in regard to the efficiency of graphite as a lubricant.

Had Mr. January Johnson's article been written four or five years ago it would have been prophetic, for the devices he hopes for as a means of supplying graphite to steam engine cylinders are now in everyday use. Graphite is now generally used for such lubrication in both an intermittent and continuous manner, and when graphite of proper quality and purity is used for this purpose, it does not, as Mr. February Johnson says, "invariably take more oil to lubricate than when graphite is not used," but quite the reverse.

Mr. February Johnson apparently considers graphite as a lubricant in the same sense that oil is a lubricant, whereas its function is entirely different. It should be considered simply as an improver of frictional surfaces. It is plain that a cylinder rough with tool marks will offer greater frictional resistance to the movement of the piston than one which is highly finished. Graphite does this finishing and keeps doing it, and so furnishes smoother frictional surfaces for the oil to lubricate.

While Mr. February Johnson's idea as to the value of graphite as a lubricant may be questioned, his persistence in using "lots of graphite" when "every attempt has been a dismal failure" is to be much admired.

—M. McN. in *Power*, May, 1903.

## CONSERVATISM.

Conservatism, says *Hotel Life*, is the arch destroyer of success, of ambition; innovation and revolution are the engines with which a man may work out destinies.

We also have the following from those very bright fellows, the Frank Presbrey Company:

"Thus times do shift—each thing its turn does hold;  
New things succeed, as former things grow old."

Hundreds of people who have been in the habit of occasionally looking into the windows of the New York Herald pressroom, have undoubtedly observed the displacement of presses that were but a short time ago the embodiment of the best ideas. They had their turn, but newer and better ones have succeeded them only to hold their turn till something better shall arrive,—although to the ordinary mortal it does not seem probable.

So it is in all lines of industry, the managers who hesitate to "scrap heap" even good and substantial machinery and substitute the latest and most improved appliances and methods, are not the ones who are known to the world as "Captains of Industry."

## GRAPHITE A TRADE BAROMETER.

The old ones are copper, and more lately iron, but why not graphite?

A barometer foretells the future weather, but equally sensitive to trade weather influences is graphite. Graphite moves with progress, it is at the head of the procession and Dixon is the headquarters of graphite.—JOHN A. WALKER.

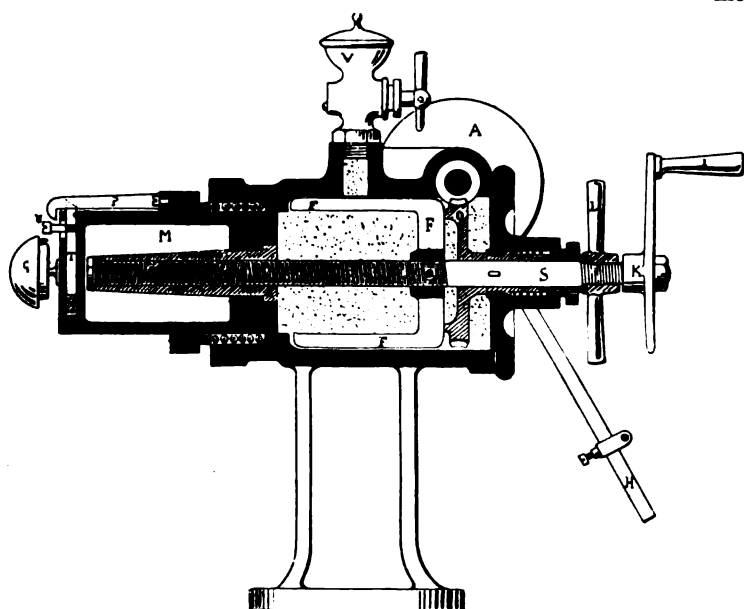
### THE HANSA LUBRICATOR.

From a Circular of the P. A. Hoppe Machine Works, Hamburg, Germany, who have made Rational Machine Lubrication a Specialty for twenty Years.

*Translated for GRAPHITE by Wm. Koester, of the Dixon Company.*

Of great importance to every steam user is a fact which is endorsed by the entire technical press, that cylinder oil is improved by five per cent. of flake graphite.

Why? Because the flake graphite gives a polish to the friction surfaces which has hitherto been unknown. Friction on the cylinder walls and piston is reduced. The surfaces are highly polished, tighter joints may be made and all friction is reduced to a minimum. These two mean less steam, which means an agreeable economy in the consumption of coal; the engine runs smoother and easier and lasts longer. The packing is tighter and does not have to be renewed so often. Repairs and stoppages are reduced. In short, the advantages of graphite lubrication are unbounded.



Besides these advantages the addition of five per cent. of flake graphite to the cylinder oil means that only one-third as much oil will be used as formerly, and this may be of a poorer quality than has been used before, which means that from 60 to 70 per cent. of the oil will be saved.

For new engines with rough cylinder surfaces, graphite lubrication cannot be too highly recommended. In a short time through its use a polish is produced that under the old methods would take weeks and months to accomplish, so that they can at once be run at their highest efficiency.

Graphite is indestructible and will not be affected by superheated steam. As the quantity of oil is reduced to one-third this is all used in lubrication, consequently there is no destructive oil which reaches the condenser or boiler. This circumstance in itself makes graphite lubrication of extraordinary importance for condensers.

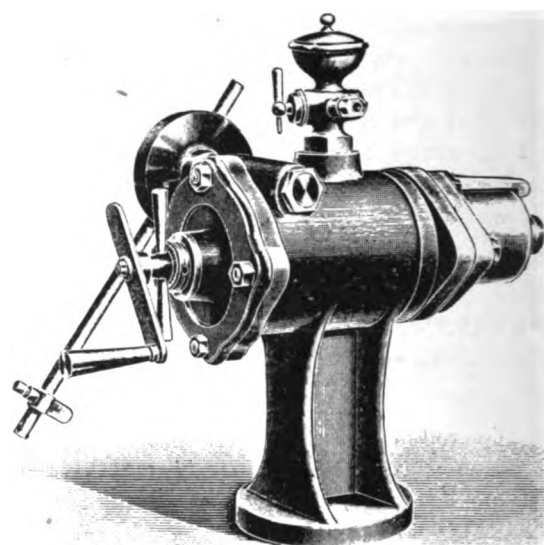
The graphite lubrication is first class lubrication in every sense of the word, but as graphite is twice as heavy as oil and consequently sinks to the bottom, the graphite must be continually agitated and raised from the bottom, so that a permanent mixture may be made, and this is necessary for complete lubrication. This has been the difficult part and

has handicapped graphite lubrication. The ordinary lubricators, pumps, etc., were not capable of holding graphite in suspension in the oil. At first they fed pure oil and at the end pure graphite, so that a continuous even mixture of graphite and oil was not obtained and, furthermore, the feed-pipes were often clogged by means of the graphite.

It was therefore necessary to prepare a very simple and practical lubricator which would furnish a permanent mixture of the flake graphite and the oil.

It is generally conceded by those who are authorities that the Hansa Lubricator has solved the problem and is a masterpiece of simplicity.

The lubricator consists of a cylinder in which there are rotating wings (FF) which run on the inner surfaces of the cylinder and which rotate with the spindle. These continually agitate the graphite so that a continuous mixture of the graphite and the oil is reached. This graphite lubricator is the only apparatus which follows the only correct method: a continuous agitation of the graphite in the lub-



ricator itself. No graphite can lie upon the bottom or cause a stopping of the feed-pipes as in the old styles.

The Hansa Lubricator does not contain any complicated works, wheels or pumps, consequently the cheap price. An additional advantage for the practical use of the Hansa Lubricator consists in the simple yet automatic operation. As the worm, worm-gearing and the spindle are in the lubricator cylinder and run continually in a bath of graphite oil, these get the full advantage of the graphite lubrication and therefore work easier and last longer. The rod is protected against turning and when it is necessary to refill the fact is announced by a single bell; if this is not noticed the connection is automatically severed so that no damage may occur.

The spindle and worm are made of steel and the spindle collar and worm-gearing are made of hard bronze.

The Hansa Lubricator works against a steam pressure of 25 atm.

They are manufactured by special machines with mathematical accuracy.

THE pleased engineer—the one who uses Dixon's Flake Graphite.

### THE CRUCIBLE IS NOT DOOMED.

The advent of so many new forms of furnaces for melting copper alloys has, perhaps, resulted in producing a little fear in the minds of the crucible maker in regard to the future of his wares. The new types of furnaces attempt the elimination of the plumbago crucible, an argument which needs no further augmenting for acceptance. The simple fact that there will be no crucible expense is very alluring. In this connection one fact is invariably passed, viz., that of the quality of the metal. For years the manufacture of crucible steel has been attempted in the open-hearth furnace, but to-day more crucibles than ever before are used in the steel industry. To be sure, steel that will take an edge, that will cut, and which is strong, is made in the open-hearth furnace, but we think it may be rightly said that the difference between a good and bad tool may lie in the fact that the steel was either made in a crucible or in the open-hearth furnace.

And so it will be with copper alloys. For certain grades of metal, where the highest refinement in the way of maintenance of mixture is unnecessary or in the quality of product, the type of furnace which uses no crucibles will have a large field, but where the condition is such that the mixture and waste must be held down, the crucible will always hold its own. We doubt very much whether it is possible to make the finer grades of copper alloys outside of a crucible; in fact, we have never seen it done. Leaving out the question of melting in large masses, there appears to be, at the present price of oil, no distinct advantage in melting cost in the type of furnace which has no crucible on account of the enormous waste. In making common yellow brass from new copper and spelter the best results which we have seen have been a waste of 5 per cent. The waste of this same mixture in a Naugatuck Valley brass mill has been reduced to a figure below 1 per cent. In fact, an average of three months resulted in a waste of only 0.94 per cent. This latter figure was the result of melting with coal and in crucibles. As for fuel consumption, the best results we have ever seen are those obtained in the use of the class of furnaces where a crucible is used but is not removed from the fire, but the whole furnace is tilted in order to pour the contents. This results in a much longer life of the crucible. In this class of furnace, using coke for fuel, we have seen eight pounds of metal melted with one pound of fuel; a melting ratio which makes the old pound for pound fuel consumption of the orthodox brass foundry appear significant.

We do not desire to go on record as condemning the type of furnace which uses no crucible, for we believe that in certain lines the field is large; but like the advent of the open-hearth furnace in the steel industry, it will not replace but simply augment the use of crucibles.

—*The Metal Industry.*

### THE COLLEGE PENCIL.

A beautiful maid of Vassar,  
In judgment none could surpass her,  
Said, "The pencil to fix on  
Is stamped Joseph Dixon—"  
And now no one can outclass her.—C. M. H.

### LORD HOWE.

George Augustus Howe, eldest son of Viscount Howe, was born in 1724, and killed at Ticonderoga, July 8, 1758. He landed under Abercrombie at the outlet of Lake George; coming suddenly upon a French force, he fell in the ensuing skirmish, and it has been generally supposed that his body was carried to Albany with the retreating army, and buried in old St. Peter's Church in that city. On October 3d, 1889, Peter Dushane, a workman, was digging a trench alongside the road in the village of Ticonderoga, and when about four feet deep he came upon a piece of decayed board. He wondered how that piece of wood happened there, but kept on digging, and in a moment more his pick struck a large stone, which he lifted and threw out. Close by this stone he found another stone, part of which was graphite. This excited the workman's curiosity very much, as the ground for rods around was free from stones. Careful search disclosed the remains of a human body and coffin. The bones were very old and crumbled like chalk, and the wood was so rotten that it came to pieces under slight pressure. The stones laid beside the fence for two days without receiving attention, but Dushane began to wonder how that graphite stone got there, and if the first one he found was also graphite. Examinations showed it to be boulder shape and very hard, dark blue limestone. There seemed to be some inscription on it, and as he cannot read or write he took it to the office of the town clerk where it was carefully washed. The following inscription in capital letters picked into the hard surface, apparently with a bayonet, was revealed:

MEM O F  
Lo HOWE  
KILLED  
TROUT  
BROOK

At the time of the above discovery, Mr. John A. Walker, Vice President and General Manager of the Dixon Company, made a personal examination at the Town Clerk's office of all the relics, and it was supposed, at the time, that the discovery would awaken interest both here and abroad. So far as we can learn, all the relics are still at the office of the Town Clerk.

### CRITICISM.

Mr. C. H. Spotts, of the graphite paint department of the Dixon Company, is an advocate of intelligent criticism. He believes it will help to produce the finest class of work, that the absence of it permits the continuance of imperfections and shortcomings. That if there had been no fault finding we would still be plowing with forked sticks and using sickles like the old Egyptians.

Macauley tells us that the creative faculty and the critical faculty cannot exist together in their highest perfection. And from Burke we learn that uncultivated people are but ordinary observers of things and not critical in distinguishing them.

Therefore the critic, or the "knocker," as we now term him, has a mission in life no less important than that of the one who constructs and creates.

The following are verses found posted on bulletin board in the small town of Coatsville, Pa.

#### NOT TRAVELING NOW.

I knew a drummer once,  
And he was wondrous good.  
His fellow-travelers' naughty ways  
He never understood.

He never took a drink of rum,  
And I have heard it said,  
He never let the barber shake  
A bottle on his head.

He never smoked, he never chewed,  
And poker never played.  
He never tossed a playful wink  
At a pretty chambermaid.

He never told a little lie  
To sell a little bill,  
And he'd never work the bellows  
His expense account to fill.

He never failed to go to church  
In manner orthodox,  
And he never dropped a button  
In a collection box.

He never let his proper feet  
In the wayward pathway roam,  
And he never took an order, and so  
They called him home.

#### OARSMEN, PLEASE TAKE NOTE.

In reply to an advertisement we sent a sample of Dixon's Special Graphite No. 635, and we now have the following response:

"I cannot too strongly recommend Dixon's Special Graphite No. 635 for oar locks, rollers of sliding seats and for the leathers of oars. It is the ideal lubricant and every oarsman should try it."

#### ROYAL SMALL TALK.

King Edward VII. of England has just returned to London after a visit, among other places, to Paris. Doubtless the ground shook under the royal feet.

It was no tall big talk, however, that occupied His Majesty. He said, for instance, to the British Ambassador at Paris: My dear Monson, you will never reach the highest diplomatic ranks until you get your beard properly trimmed. A neatly trimmed beard, he added, is of enormous importance in life.

The best thing, however, was the rivalry between the *Chef* at the British Embassy and the *Chef* at the Elysee Palace, in catering to His Majesty. The French cook at the Elysee Palace so far surpassed the one in the Embassy, that to use our plain American short cut expression, the John Bull *Chef*, "was not in it."

The French Palace *Chef* had a menu of exquisite conceptions. It was called bewildering.—JOHN A. WALKER.

## Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, type-writer work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing.**

**Dixon's Plumbago for Powder Glazing.**

**Dixon's Plumbago Foundry Facings.**

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite.**

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Cycle Chain Graphites**, for perfectly lubricating chains and gears of bicycles.

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Anti-Flux Brazing Graphite**, to prevent the spelter from adhering when brazing.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians.**

Special circulars with detailed information sent on request.

# Graphite

VOL. V.

AUGUST 1903.

No. 9.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

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## HOW OUR ENGLISH CUSTOMERS USE DIXON'S PURE FLAKE LUBRICATING GRAPHITE.

The following extracts from several letters received from our English customers will indicate in what manner and how Dixon's Flake Graphite is used abroad:

1. We find it is principally used for lubricating blooming mill bearings, live roll brasses, pump rams, etc., and more especially for marine engine work, where it is found very efficacious in reducing hot bearings.

2. Very many of our customers use Dixon's Flake Graphite mixed with oil and grease for engine lubrication.

3. Our customers among the cotton spinners use Dixon's Flake Graphite chiefly for sprinkling on shaft bearings, mixing with oil or grease both for journals and cog wheels, for cooling hot

bearings and also flushing a little into the steam engine cylinders, and, we think, in all cases with very good results.

Our customers among the manufacturers use Dixon's Graphite much the same way as the cotton spinners do.

Among our customers, the engineers, we find that Dixon's Graphite is used for lubricating grindstone axles, drilling machine spindles and for cranes, in all cases being mixed with a little oil to a required consistency and, in some instances, it has been used for rubbing turned and fitting bolts for face plate couplings, as it has been found that these bolts can be inserted into the holes and taken out again much easier after being rubbed with Dixon's Pure Flake Graphite. Dixon's Flake Graphite is also used for general purposes in small and minute quantities for putting into machine bearings.

Among our general customers we have sold Dixon's Flake Graphite to wire rollers, glass manufacturers, Portland cement manufacturers, chemical manufacturers, distillers and others; but for what purposes they use it we don't quite know, but we have continued sales to these firms. We also sell Dixon's regular Plumbago to packing makers and gun-powder manufacturers.

4. We supply Dixon's Flake Graphite quite largely to steam vessels and presume it is used for cylinder lubrication.

5. We are supplying Dixon's Flake Graphite for the lu-

brication of steam cylinders and new bearings on locomotives and other kinds of machinery.

6. With regard to the uses of Dixon's Pure Flake Graphite, we may say it has been used by our customers for the following various purposes:

Mixed with oil for jointing purposes.

Lubricating gas engine cylinders.

Lubricating blast furnace cylinders.

Lubricating steam engine cylinders, locomotives and bearings generally. It has also been used mixed with oil in starting a new 2,000 horse power Corliss compound vertical engine, on trial trips for marine engines, on the slides and valves.

In fact, the engineer of a large works here, said that he uses Dixon's Pure Flake Graphite wherever he can where there is friction, and would not be without it.

We have used numbers above for the different letters received rather than make use of the dealers' names, as we have not had permission to use their names in print.

## GRAPHITE FOR MANILA ROPE.

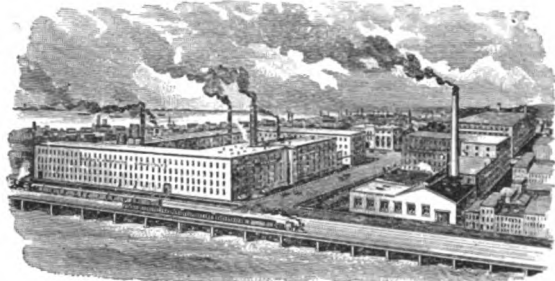
Graphite is stated to be an excellent preservative for manila rope. One rope manufacturer treats the inner yarns of each strand, as well as the core, in a bath of lubricant, the ingredients of which are graphite and oil. This lubricant thoroughly permeates all the fiber, thus overcoming internal wear, while sufficient comes to the surface to afford ample protection against injurious outside agencies, and the lubricant does not injure the rope. The oil is used as a vehicle to convey the flakes of graphite, and as long as the strands and yarn remain together they are thus kept soft and pliable. Ropes so treated are self-lubricating, and need no external dressing.—*The Railway and Engineering Review*, April 25, 1903.

NEXT to a match that will not light is a friend who will not stand up for you in an emergency. We all have friends who are always ready to say a good word for us when we do not need it; but when the time comes to test them, they fly away like birds at the approach of the cat. I sincerely hope that in the next world, if not in this, we shall have a chance to find out what true, fearless, unalterable, perfect friendship is,—friendship that cares not whether you are poor and ill-clothed or rich and arrayed in fine raiment; friendship that casts its lot with yours whether you munch crusts or feed on pheasants; that will remain at your side whether you walk on cobble-stones, or ride in state over the king's highway.—*Selected*.

ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

### BRANCHES AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Horgen (Switzerland), Finland, Havana.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., August 1903.

### KANSAS CITY FLOOD.

As Seen on June 20, by "Sunny San Juan."

Clouds and mists still hang and drizzling rains fall every morning over this desolate Missouri and Kaw River Valley region.

So far I have seen no accounts or pictures of this flood in the papers which could give even the faintest idea of this awful "yellow terror." From the end of the cable line on Twelfth Street, at the stock yards, to the edge of the east side of the Kaw River, the force of the water literally wrecked everything. Conceive, if you can, a mass of wreckage made up of fallen houses and fences; the contents of lumber yards; huge gas, water and oil tanks, and the entire mass covered with from 8 to 24 inches of slime and mud mixed with filth and dotted with thousands of hams and carcasses of dead hogs. At the east edge of the Kaw River, a sight bursts into view that beggars description. The abutments of the bridges remain, but not one of the sixteen bridges is left. The wild waste of mad waters must have been a dreadful sight.

Here, at the river, a hundred skiffmen shout themselves hoarse and put you to distraction in their efforts to get passengers at ten cents a head. Each loads his skiff to within three inches of its edge, and in their tugging at the oars against the fierce current, you see at once that they are greenhorns at the business. This, added to the carelessness of the landlubbers in the boat, makes you thankful that you have your life well insured. The man in front of you persists in standing up to hail someone or see something, while

a half drunken fellow on the next seat beyond the oarsman with more sense and great emphasis insists on the first man sitting down, and sitting down quick.

After twenty minutes struggle with the river and after collisions and threatened ones with other skiffs, you climb the opposite bank and enter what was Kansas Avenue. Here, at the right, as you face the west, are at least fifteen railroad cars on sides and ends. Here in front and in the middle of the street and lying across the railroad tracks is a 25 foot roof of some building. From here on you begin to wade and pick your way through the mud, sometimes 20 inches deep, and the debris of an indescribable wreckage. The filth and stench is simply awful. Just opposite Swift's Packing House, a 30 foot oil tank has landed inside of a saloon and is jammed up against the counter. The side streets are filled with small frame houses, the kitchens of some being chock-a-block with the parlors of the neighboring houses. Further up and westward the ruins are possibly even more complete and desolate. Not less than eight great tanks are in sight and look as if they are trying to get through the buildings or to cover them like huge extinguishers. Here, as on the other side of the river, there is the vilest filth, dead animals of all kinds, and the waste of beef and hog products from the adjacent packing houses. The air is unbearable with the stench and the whole space, ten miles long and six across, is a most dangerous ruin.

More astonishing than all is that this great people have not and will not ask or receive aid from outside. Such pluck has never before been seen in the history of calamities.

Not far from the Swift's, plant on the top of a ten-foot pile of river debris, stands a new and clean tent, 15 foot square. At the door the sign reads, "The Hogs are Dead, but not I. In Here You Will Find the True Kansas Spirit."

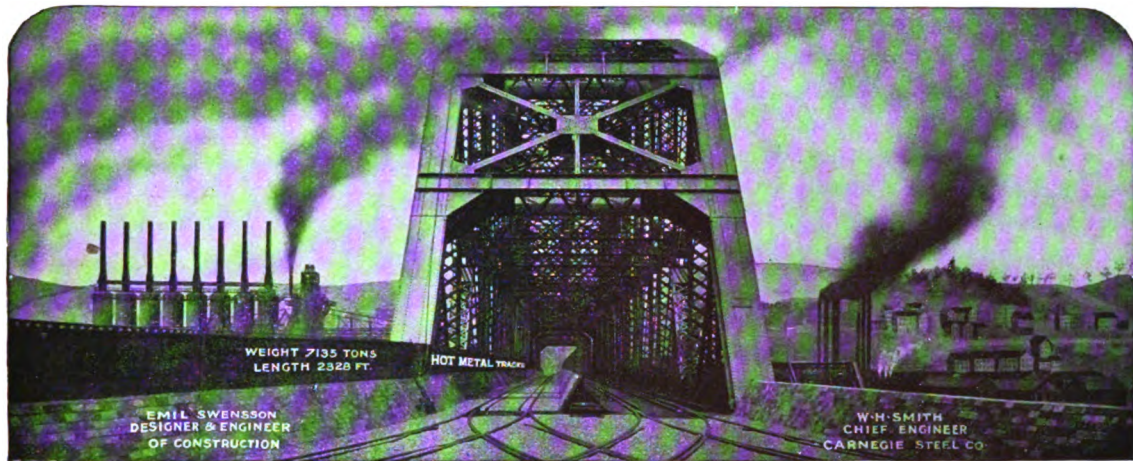
It seems to me that no estimate that I have seen is large enough to express the amount of loss to the Kansas City people. It will take six months to clean up and a year to rebuild. Eighty per cent of the Kansas City business has been knocked out for the last thirty days. It seems now as if it would take years to get the "fragrance" out of one's nostrils and the ill effects out of one's memory.

### GRAPHITE IN THE CYLINDER.

I see that several of your correspondents have been writing about graphite and how to get it into the cylinder. I managed to do it by accident, and will tell you how. We have a duplex pump, 20x10x7 $\frac{3}{4}$ , with an oil sight feed which we don't use now. I screwed on an old open top lubricator (with a cock in the connecting pipe) into the cylinder, filled it about half full of graphite and screwed on the top. There is a slight leak of steam at the stop-cock, which seems to keep the graphite in circulation, and so it drops into the steam and in the cylinder. Each morning the cup is empty, except a little hanging around the side. Last week I had to remake the cylinder head joint, and on taking it off found the cylinder in splendid condition. The pump used to grunt continuously, unless we kept the sight feed going all the time. I now use about a tablespoonful of graphite per day and have no trouble.

—H. S. DUMBRILL in *Power*, May, 1903.





UNION RAILROAD BRIDGE, CROSSING THE MONONGAHELA RIVER, AT PITTSBURGH, PA.

### BRIDGE BATTLES WITH BLIGHTING BLASTS.

Pittsburgh Span Built to Withstand Corrosive Fumes and Other Destructive Influences.

The great iron bridge of the Union Railroad that spans the Monongahela River at Pittsburgh, Pa., is built to withstand corrosion and other influences that would assay its destruction. Subjected to heat from molten metal, sulphur fumes from locomotives, river steamers, furnaces and steel mills, there is probably no bridge in America so exposed to destructive agencies as this one.

Dixon's Silica-Graphite Paint is employed as a protection from the injurious blasts and fumes; and throughout the structure is built of the strongest and most durable material. The engineers have been exceedingly careful to guard against the weakening of the parts of the structure that are subjected to the greatest danger from exposure.

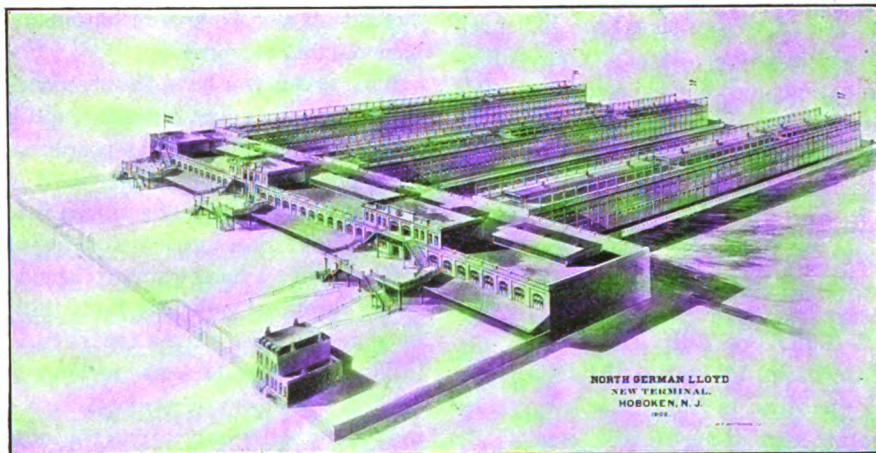
—*Popular Mechanics.*

### FIRE-PROOF PIER TERMINALS.

The pier terminals of the North German Lloyd Steamship Company, nearing completion in Hoboken, mark a new departure in the science of pier construction. The plans of W. L. Wittemore, chief engineer, provide for absolutely fireproof buildings.

A solid seawall, 900 feet in length, has been built of granite and concrete. On this foundation a two-story bulkhead building, 850 x 130 feet, has been constructed of steel

sels which render a rigid construction of stone impracticable. Concrete floors cover the deck of each pier. All steel columns and girders are inclosed with concrete and jackets, as in the bulkhead building. The floors of the piers are divided into three compartments by fire-proof walls with double automatic fire doors. The entire sides of the piers are made up of huge iron doors operated by an improved device for raising and lowering. Automatic sprinklers to



columns filled with and surrounded by concrete held in place by iron jackets. The same material is being used for surrounding the steel girders. Brick arches are used between girders with concrete floors.

The three piers extending from the terminal are 910 x 80 feet, 894 x 80 feet and 874 x 90 feet. The foundation construction is necessarily of wood piling on account of the great depth of soft mud and the impact of heavy ocean ves-

operate at a certain temperature are installed, also an independent system of fire mains and hydrants. The Multi-phase Cable system of automatic alarms, with loose coils of the same cable to lay over stored merchandise, will be used. Numerous improvements for the security and comfort of passengers are included in the terminal. The entire structural steel and metal work of bulkhead building and piers is protected with Dixon's Silica-Graphite Paint.

**TIME TESTS PROVE IT THE BEST.**

THE INTERIOR ELEVATOR COMPANY,

MINNEAPOLIS, MINN., Dec. 7, 1899.

*Joseph Dixon Crucible Co.*

GENTLEMEN:—Yours of the 1st inst. is received. We believe Dixon's Silica-Graphite Paint to be the best paint for use in painting iron covered buildings. We have tested it by painting our elevators, and in making comparative tests with three others. Dixon's Silica-Graphite Paint is the most durable, having the best body and the best appearance after being on the elevators nearly three years; and we find the elevators are today apparently in as good condition as they were when first painted.

Yours very truly,

B. H. MORGAN, Manager.

**THEY SAY.**

That ignorance of the law excuses no one but the lawyer.  
That there is no luck in horseshoes. They never make both ends meet.

That charity begins at home and often ends there, too.

That some husbands are very indulgent, but sometimes they indulge a great deal too much.

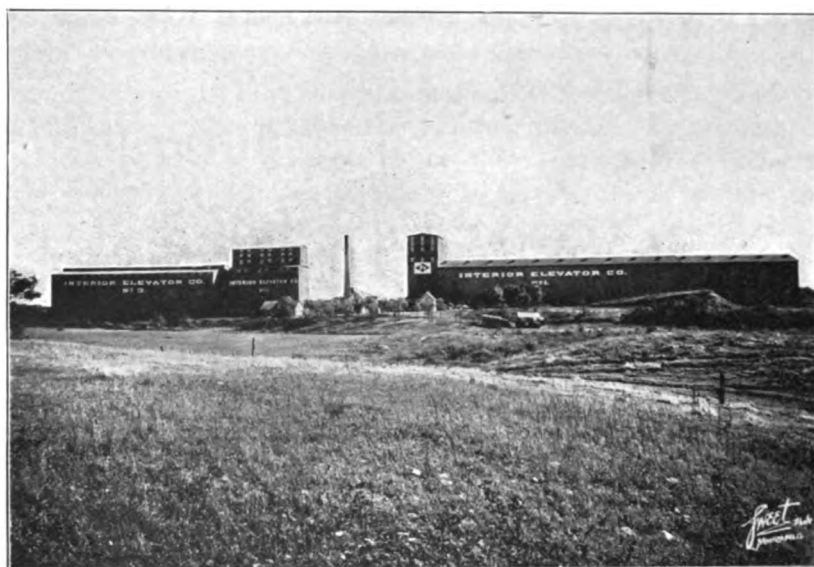
That your friends may not know much, but they know what they would do if they were in your place.

That we always admire the wisdom of those who come to us for advice.

That money talks, but often it goes without saying.

That women may not be the greatest inventors, but it is strange how apt they are in discovering new wrinkles.

That the aroma of cloves is the breath of suspicion.



MINNEAPOLIS, MINN., May 31, 1901.

*Joseph Dixon Crucible Co.*

GENTLEMEN:—I am pleased to say that I am in a position to confirm my letter of Dec. 7, 1899. Your Silica-Graphite Paint has more than met our expectations. We are convinced that there is nothing equal to it for iron covered buildings, and we recently purchased an additional quantity for our use, which should be a conclusive argument of our high opinion of it.

Yours very truly,

B. H. MORGAN, Manager.

**PAINT FOR CORRUGATED IRON.**

Dixon's Silica-Graphite Paint, by reason of its elasticity and tenacious adhering qualities, is one of the best paints on the market for the protection of corrugated iron.

Mr. A. Snyder, of the lumber firm of Ross and Snyder, Third Ave. and Union St., Brooklyn, after experiencing a great deal of trouble in getting a paint to adhere to their large corrugated iron lumber shed, had it painted with Dixon's Silica-Graphite Paint. One coat of Dixon's Natural was applied and given a sufficient time to thoroughly dry, and then a second coat of Dixon's Dark Red was applied. The paint has now perfectly adhered and protected the building for two years.

That an ounce of silence is easily worth a pound of explanation.

That all men believe in harmony, if you let them run the harmonizing machine.

That when you have the rheumatism, if you put your leg through the window, the pane will be gone.

That you can make some people keep a secret, if you give them chloroform enough.

That the first duty of a citizen is to keep his nerves strong and his digestion in good working order.

That when a man wants to be sure that he is right before going ahead, he generally finds that he has been distanced by someone who takes a few chances.

That you should learn to labor, and to wait no longer.

That an absolute vacuum is a physical impossibility, that it can exist only in your mind.

That a man will promise a woman anything to keep her quiet.

That when a man says he is perfectly contented, it means that he cannot see a possible chance to get any more.

That a self-made man is often too proud of his job.

That success is the child of audacity.

That a nickel in the hand is worth two in the slot.

That few people can stand prosperity, but there are many who would like to try it.—*From The Gregg Writer.*

### OLD SOUTH BUILDING.



Description of Mammoth Structure Protected With Dixon's Silica-Graphite Paint, and Brief Sketch of Boston's Old South Church.

Overshadowing Boston's historic Old South Church has risen, with the remarkable rapidity of modern construction, the Old South Office Building, one of the largest, if not the largest office building, in New England. Few structures of recent design have attracted as much interest as has been created by the erection of this building for which the steel contract amounted to nearly 2,300 tons.

Under the competent direction of Mr. Clinton J. Warren, architect, the building has been constructed. The supervising architects are the well-known firm of Shepley, Rutan & Coolidge. The Brown-Ketcham Iron Works of Indianapolis, Indiana, for which Mr. Fred W. Robinson is the Boston sales agent, furnished the structural steel, which is protected from corrosion with a priming coat of Dixon's Silica-Graphite Paint, natural color, and an erection coat of Dixon's Olive Green.

Dixon's colors, on the massive frame, have attracted considerable attention and interest, especially among architects and engineers whose vocation enables them to fully realize the great importance of a good paint for the protection of structural steel.

The building is bounded on the west by Washington street, on the north by Spring Lane and on the south by Milk street, the east elevation being on Sewall Place. It is eleven stories high. The exterior walls are of pressed brick with terra-cotta and granite trimmings.

Half surrounded by the Old South Building proudly stands the Old South Church, famous in history before the patriots of our country signed the Declaration of Independence. There are few spots in the New World that have as many historic associations as the Old South Church. On the land where it stands, Governor Winthrop had his dwelling place. Beneath its roof Benjamin Franklin was baptized. Its walls have rung with the eloquence of Adams and Quincy and Warren.

When George Washington later entered the rescued town, one of the first places to be honored with his presence was the Old South Church.

Not only in early colonial days and during those great uprisings preceding the Revolution which were the forerunners of our independence, has the Old South presented a scene of interest. At the present time many find pleasure

in viewing the relics contained within this historic meeting house. There is an atmosphere about the place that will cause every patriotic heart to thrill. For, as a Boston orator once said, "The ancient edifice is blessed with the immortal soul of independence."

Had the Old South Church been of less historic interest, it would have fallen in submission to the march of progress to make additional room for the mammoth office building which bears its name.

Owing to the large congregation, it was decided to rebuild the meeting house in 1727, and the new edifice which is so well known to-day, was completed in 1730.

### THE UNATTAINABLE.

She had studied all the ologies  
Which are taught in modern colleges;  
She had mastered all the sciences;

All languages she knew;  
She had conquered ancient history;  
To her Sanskrit was no mystery;  
In all the great affairs of life

She knew just what to do.

But when she tried her hand at euchre  
All her partners quite forsook her;  
For, though in erudition

This wise maiden set the pace,  
Still, in spite of what was taught her,  
She was Mother Eve's own daughter,  
And so she never missed a chance

To trump her partner's ace.

—*Chicago Times-Herald.*

### A FEW WORDS TO OUR PATRONS THE STATIONERS.

In 1868 we commenced building machinery for making lead-pencils and on November 18, 1872, we shipped the first invoice of one gross to Voorhees Bros., Morristown, N. J. Now our sales are beyond what our wildest expectations were then. We began in a building 25x25, with four or five hands, and now use one hundred thousand square feet of floor space, and employ about five hundred hands.

In the beginning we had only three or four kinds for business and school uses; now we make hundreds of different kinds for business offices, schools, drawing classes, artists, architects, and mechanical draughtsmen, besides a large variety of pen-holders, point protectors, slate pencils, artists' cases, special leads, assortment boxes, erasive rubbers, etc., etc.

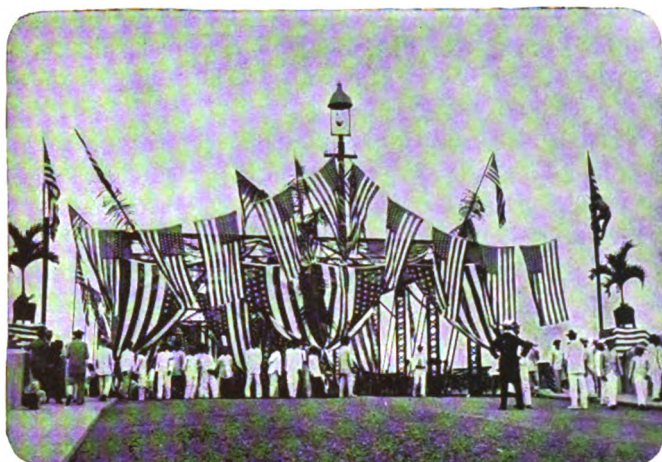
We have literally created a new American industry. We took the only medal for Progress at the Vienna Exposition, in 1873, and the only gold medal at the Paris Exposition, in 1878.

Dixon's pencils are used and preferred in more schools and colleges in the United States than all other kinds together doubled. They are also used in every department of the United States Government.

The peculiar success of the Dixon Pencils lies in the LEADS, which are made of AMERICAN GRAPHITE; they are unequaled for strength and toughness and absolutely unsurpassed for smoothness and uniformity.—JOHN A. WALKER.



### A CELEBRATION IN MANILA.



The above illustration shows the Santa Cruz Bridge at Manila, decorated for its opening on March 1, 1902. Our readers will be interested to learn that this is the first steel bridge in the Philippines, paved with Australian Wooden Blocks and to be painted with Dixon's Silica-Graphite Paint, both of which were furnished by Henry W. Peabody & Company, of Manila and New York.

The lower illustration gives an excellent idea of the constructive features of the Santa Cruz Bridge. We take pride in the use of Dixon's Silica-Graphite Paint for the preservation of this notable structure in Manila. Our claims for the protective qualities of this product have been fully substantiated in its extensive and continued use in every country where steel is used. To those interested in protective paint, we will send without charge, cards illustrating different classes of steel construction which are protected with Dixon's Silica-Graphite Paint.



### A RAPID BUSINESS TRANSACTION.

The rapidity with which business can be transacted these days is almost beyond belief, although so many startling departures have of recent years come to light, the wonder of it is often lost sight of. One of the quickest transactions on record occurred this week, when a manufacturing concern in the Northwest telegraphed the Jersey City office of the Joseph Dixon Crucible Company at 10 a. m. for prices on a line of goods. The order was referred

to the Chicago office by wire and they immediately called up the firm in the Northwest by the long distance telephone, secured the order, wired the Jersey City office and received an acknowledgment of telegraphic order at 1.15 o'clock. The entire time consumed from the time the inquiry was received at Jersey City until the acknowledgment of telegraphic order was received at the Chicago office was three hours and fifteen minutes. When it is taken into consideration that the distance between all points and back and forth amounts to 5,500 miles, with the time necessarily lost in delivering the telegrams, it is a marvelous transaction.—*Geyer's Stationer.*

### IT'S ALL IN THE LEAD.



Forty years ago the school teacher had to get along as best as he could with foreign made pencils; now things are changed, and he has the privilege of using Dixon's American Graphite Pencils in all the schools under his charge.

These pencils are not the result of an inspiration, but are the product of much care, thought and study, in order to provide just the right kind of a pencil for the many kinds of educational work.

They are used in all the leading scientific and technical schools in the country, and are recommended by the drawing professors. They have strength and durability of lead, combined with absolute smoothness and accuracy in grading.

### LINOTYPE TESTIMONIAL.

A linotype operator on one of the leading papers in New Haven writes us as follows:

"We have been using Dixon's Special Graphite No. 635, ground in oil, for spacebands on two linotype machines for over two months and find it works most satisfactorily.

"We took a small board, covered it with cloth, upon which we sprinkled a *small* quantity of graphite; the boys then rub the bands in this every morning which makes them work freely all day.

"Our machines are run eighteen hours four days in the week, and bands are only cleaned once."

### DIFFERENCES IN TALENT.

Laplace was the greatest mathematician of all times. Bowditch was a notable American mathematician.

Laplace wrote a profound treatise. Bowditch read it. Bowditch admitted Laplace's premises and after Laplace stated his premises he added, the "conclusion is obvious." Bowditch said it took him two weeks hard study to see what Laplace called "obvious."

Note the difference in human talent; what one man calls obvious another takes two weeks to comprehend and others perhaps never see it.—JOHN A. WALKER.

### DIXON'S "ETERNO" PENCIL.

The Pen is Mightier than the Sword, and Dixon's "Eterno" is Mightier than the Pen.



In the first place make a note that Dixon's "Eterno" is a first-class pencil with which to jot down memorandums, and for all the ordinary uses of a black lead pencil.

It writes such a dark purple as to be practically black. The "lead" is of peculiar smoothness and toughness. It writes freely and smoothly, and it carries and holds a good, sharp point.

This being true, the man with Dixon's "Eterno" in his waistcoat pocket needs no other pencil for every day use.

He needs no fountain pen.

Rejoice! all ye traveling men, professional men, insurance agents that have been dragging about an awful fountain pen as Sinbad carried the Old Man of the Sea, because they could not get free from it.

You can give the fountain pen to your enemy now and use Dixon's "Eterno" instead.

You can sign a check with Dixon's "Eterno" and the bank will consider the signature legal.

Physicians can write prescriptions with it and the symbols will remain legible as long as the paper endures.

For noting and checking every business transaction, such as salesmen's orders and buyers' receipts, bills of lading, invoices—all the countless records of commerce—the convenience of the pencil and the permanence of ink work together for accuracy and safety when Dixon's

"Eterno" makes its indelible marks.

In banks, insurance, express and railroad offices, in every shop in the land, in every farm house, in traveling on land or sea—anywhere that writing is done, occasions innumerable arise wherein Dixon's "Eterno" pencil serves as nothing else would do.

Business letters written with "Eterno" and copied have the appearance and all the merits of letters written with high grade ink. Both letter and copy are indelible and a better, sharper copy is obtained from "Eterno" writing than from any ink-written letter.

Hosts of business men sign type-written letters with Dixon's "Eterno," saving the nuisance of keeping a special well of copying ink upon their desks for this single purpose.

"Eterno" is the latest product of the ripe experience in pencil making of the Joseph Dixon Crucible Company. In it is combined all the peculiar excellence of Dixon's pencils, straight-grained Florida cedar, pure Ticonderoga graphite, combined with the best aniline colors in a secret process to get the qualities of distinct black writing, purple copying and indelibility that makes "Eterno" worthy of this effort to tell you something definite about it.

If you will go to your stationer and buy Dixon's "Eterno," and try it on all the occasions when you need a pencil for any purpose, and also the occasions when you would ordinarily need a fountain pen or a pen and holder

and well of copying ink—we believe you will agree that "Eterno" is worth talking about, and likewise worth all the pains and skill and expense required to produce it.

Withal, it costs no more than any other good pencil.

### DIXON'S GRAPHITE AXLE GREASE.

Sometime ago we had a postal card from a livery stable man in Savannah, Ga., concerning Dixon's Axle Grease. We sent prices and later received an order for a ten-pound pail. We also asked our representative, Mr. J. Frank Drake, to call and see the man when next in Savannah. He did and he writes as follows:

"I find this man to be the owner of a rather small stable, but he is a great big advocate of Dixon's Axle Grease. He says that he thinks he has enough in that ten-pound pail to last him perhaps one or two years, for he never saw any grease that would go one-quarter as far or do one-quarter the service."

As we are not advertising Dixon's Graphite Axle Grease, it has not the sale it otherwise would enjoy, but all who use it are loud in its praise.

### DIXON'S SILICA-GRAPHITE PAINT FOR WATER DRUMS OF BOILERS.

We are informed by a prominent power plant engineer that in his younger days, while connected with the ocean liners, he found that by applying Dixon's Silica-Graphite Paint to the interior of the water drums of boilers, corrosion was absolutely prevented.

The government inspection of boiler drums is very severe, and drilling is resorted to in order to determine the deterioration of the steel, and the pressure reduced in accordance with the depreciation in the tensile strength of the steel plate, so that the matter of corrosion is one of vital importance to those desiring to maintain standard pressure. Frequently the government inspectors remarked on the absence of corrosion where Dixon's Silica-Graphite Paint was used. The custom was to apply one good coat of this paint every six months. The test is a very severe one, owing to the impurity of the water itself, and the alternating conditions of moisture and drying.

We will be glad to hear from engineers who are desirous of protecting boiler drums.

### GRAPHITE AS A PREVENTATIVE OF BOILER SCALE.

La Colorado, Sonora, Mexico, April 15, 1903.

SIR:—Will you please publish the following: A very small quantity of graphite added to water used for boilers will prevent scaling, and if the boiler already has scale it will not only prevent further deposition, but the minute particles of graphite will penetrate the old scale and soften it, so that it will drop to the bottom and can be taken out inexpensively. This assertion is based upon fact. Having used water taken from the mine, which was only slightly discolored by graphite, the softening of the scale was accidentally discovered. The water apparently contained nothing else which might have produced the same result. We used the water probably two months before the discovery was made.

R. O. KOHL.

**"PICK-ME-UPS" FOR THE SALESMAN.**

FROM PICCOLO.

*Continued.*

A salesman should recognize the fact that his house may make mistakes, but that the head of the house is not in a position to give personal attention to every detail. In adjustments with a customer, therefore, a salesman should never blame the house, but rather place the blame where it belongs—on the shipping clerk, bookkeeper or office-boy. It is easier to excuse an error on the part of a subordinate.

A salesman should never magnify trouble. On investigation he usually finds that the difficulty is not so great as he thought it.

When entering a dealer's store for the first time, never ask for the proprietor. Ask for the buyer and address your inquiry to the first person you meet. Never ignore the poorly dressed man or boy; he may be the one with whom you have to do business.

A salesman who reports that he has found trade dull but that he is making "lots of friends" for the house, doesn't know the meaning of the word friend.

The friends of a house are those who send them their orders.

The more friends you have, the more money you can make. You make money through your friends. Your enemies won't let you make it through them. Cultivate the right kind of friends.

If you want to make a man your friend, get him to do some favor for you. He will think more of you than if you had placed him under an obligation by doing something for him.

It is sometimes said that there is today no friendship in business. There is just as much today as ever; the only difference is that there are more friends.

#### **SPECIFICATION FEATURES FOR RE-PAINTING METAL SURFACES.**

Wire-brush all scale, rust and blistered paint.

Touch up all broken spots with Dixon's Silica-Graphite Paint.

Apply an even coat of Dixon's Silica-Graphite Paint, natural color.

After three or four weeks a second coat of Dixon's Silica-Graphite Paint, olive green or red color.

Metal work to be perfectly dry when paint is applied.

Careful and competent mechanics to be employed.

Head of package to be removed and the paint well stirred.

No thinners or adulterating oils to be used.

Materials and workmanship to be subject to inspection at any time.

Dixon's Silica-Graphite Paint to be furnished in original packages ready mixed for use as manufactured by the Joseph Dixon Crucible Company.

#### **DIXON'S "ETERNO" PENCIL.**

If you haven't tried one of these pencils do so. It writes black and copies purple. It is better than copying ink for letters, and it is also the business man's pencil.

If your stationer does not keep them, send ten cents in coin or stamps for sample. It will pay you.

## **Productions of the Dixon Crucible Co.**

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dipping.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, type-writer work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing.**

**Dixon's Plumbago for Powder Glazing.**

**Dixon's Plumbago Foundry Facings.**

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite.**

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Cycle Chain Graphites**, for perfectly lubricating chains and gears of bicycles.

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Anti-Flux Brazing Graphite**, to prevent the spelter from adhering when brazing.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians.**

Special circulars with detailed information sent on request.



# Graphite

VOL. V.

SEPTEMBER 1903.

No. 10.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

*COPYRIGHTED 1903 BY THE JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.*

## "PICK-ME-UPS" FOR THE SALESMAN.

FROM PICCOLO.

(Continued from Page 270.)

A salesman should not believe everything he hears about prices made by a competitor. The buyer always tries to convey the impression that a price is too high, and devious are the ways of buyers.

A salesman always hears of lower prices—never of higher ones—from the buyer.

A salesman should endeavor to be thoroughly informed on all subjects pertaining to his business, and, in addition, the more information of all kinds he possesses, the more interesting he may make his conversation.

A salesman, after presenting a sample of new goods to a number of customers, is likely, in a short time, to look upon the goods as no longer new, because the goods have ceased to be a novelty to him. He grows tired of them, his enthusiasm wanes and he does not sell any more of them for that reason.

A salesman must not forget that the goods are still new to every customer who has not bought them, and should not permit his interest to relax until he has covered the entire field.

A salesman should know enough to answer any question about his goods. If he doesn't know, he should have tact enough to avoid a display of his ignorance. Tact will cover a multitude of shortcomings and win the day against great odds.

A salesman may not know it all, but neither does the customer. The more a salesman knows about his goods, the better he can sell them.

A salesman should have an abundance of tact and resource—an unfaltering courage with a capacity for persistent hard work.

Salesmanship is an art, and, like other arts, may be cultivated. A good address, pleasing presence, if not possessed naturally, may be brought to a high state of perfection by a little observation and attention.

A salesman should not disdain stage effect. He is a player on the stage of business. Manœuvres calculated to produce good impressions are valuable adjuncts to his art.

Neatness of attire and a general appearance of prosperity are very valuable attributes. Men always like to buy of salesmen who seem successful. They have confidence in them.

An alert, enthusiastic manner, coupled with intelligence, makes a good impression; and the hand-shake, the eye, a smile, a frown, cheerfulness and even anger may be made forceful factors in salesmanship.

A salesman who is constantly burdening his correspondence with details of minor importance, soon earns the reputation of being an old maid. The application of a little horse sense to affairs would render the mass of trivialities and wailings that characterize the letters of some salesmen entirely unnecessary and save the house much annoyance.

A salesman should cultivate self-confidence and learn to depend on his own judgment. Many small matters are referred to the head of the house that could as well be adjusted by the salesman.

The man who can do things, and do them right without being continually instructed, is the man who is appreciated in business.

Every salesman, clerk and employe, and, for that matter every proprietor and employer, should read "A Message to Garcia," by Elbert Hubbard. It is worth a thousand times its price to a man in business.

A salesman of intelligence will understand that he has something to learn, and will be a good listener. He will be ready to accept suggestions from all sources and profit by them whenever he may.

A salesman will find it unpleasant and unprofitable, in most cases, to engage with a buyer in a heated argument on politics or religion.

A salesman will soon learn that controversial argument with a buyer, on any subject, is without profit.

Endeavor to be perfectly cool and collected at all times. It is an advantage not to be slighted.

When presenting goods to a buyer, be earnest and enthusiastic. A half-hearted manner never makes a favorable impression.

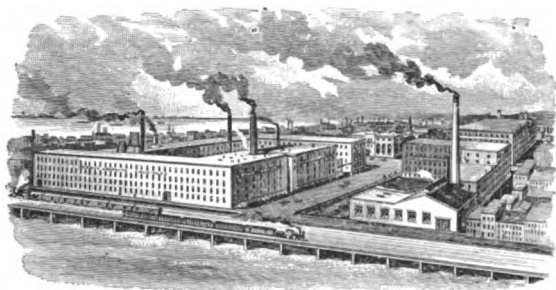
## ONE MORE.

In August GRAPHITE we wrote of people we like but we forgot one kind; he appears in our correspondence this morning. It concerns an overdue account, and in reply to the fifth statement the house writes, "our treasurer is away on his vacation and the matter will have to await his return." What a seraphic vacation such a man must have.

—JOHN A. WALKER.

ESTABLISHED 1827.

INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

### BRANCHES AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Horgen (Switzerland), Finland, Havana.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., September 1903.

### IS IRON OXIDE OR GRAPHITE PAINT POISONOUS OR INJURIOUS IN A SANITARY WAY?

W. B. D., St. Mary's Ferry, N. B., asks:

What chemical or mineral poison is there in iron or brown graphite roofing paint that would poison an animal, say a cow, for instance, on drinking the rain water coming from a roof that had been painted the day before, the water merely running over the new paint?

Answer: There is absolutely nothing injurious in oxide of iron or graphite paint that would affect water running over it to such an extent as to cause serious complications to the stomachs of animals. Such water might produce nausea, if partaken of by a delicately inclined human being, but even in such case there would be no ill after effects. Even if there were some soluble matters, such as iron sulphate, present in the pigment and some oxide of lead in the driers, these would be so well enveloped in the oil that they would not be dissolved by the rain water. The paints you mention are the most harmless in the whole line of roof paints.—*The Painters' Magazine.*

### DIXON'S COLORED CRAYONS AND THE NEW OIL OF RIGHTEOUSNESS.

A pet notion of the new education is to let the pupil tell a story by drawing instead of writing. It doesn't matter in the least whether or not he knows anything about drawing. A story is read to him, and he is expected to illustrate it in his own way and according to his own ideas. It is this lat-

ter part of the creed that sometimes leads to diverting results. For instance, a portion of "Pilgrim's Progress" was read to a certain class the other day, that they might interpret it in crayon. The portion which was read included that crisis where Christian watches Satan doing his best to put out the flames of righteousness, which, in spite of all efforts, however, rise higher and higher, and presently Christian discovers the reason for this: Upon the other side of the fire is an angel pouring on the oil of righteousness, against which the water which Satan pours is nothing. One of the children illustrated the situation in this wise: An enormous bonfire arose in the middle of the page, its flames just as red as Dixon's Scarlet Crayon could make them. On one side stood Satan playing upon the flames with a modern garden hose, from which issued a copious stream of bright green water. On the other side was an angel of the conventional type—harp, halo, wings and all, but whose hand grasped a big oil can of the kind common to the nineteenth century North American households, and in big letters labeled "Kerosene."

### "SAYINGS OF THE WISE."

"I find that a great thing in this world is not so much where we stand as in what direction we are moving."

—O. W. HOLMES.

"If you would not be forgotten as soon as you are dead, write things worth reading, or do things worth writing."

—FRANKLIN.

"When you know a thing, to hold that you know it, and when you do not know a thing, to allow that you do not know it—this is knowledge."

"The aim of education should be to teach us rather how to think than what to think—rather to improve our minds so as to enable us to think for ourselves, than to load the memory with the thoughts of other men."—BEATTIE.

"You will never find time for anything. If you want time, you must make it."

"It may be proved, with much certainty, that God intends no man to live in this world without working; but it seems to me no less evident that he intends every man to be happy in his work."—RUSKIN.

"We escape from the slavery of selfishness only as we come into the liberty of God. Not to deny ourselves, O friends, but to love and serve God, is the way to break down the tyranny."

"The only thing that can defend us against the tyranny of the form is the power of the spirit of our work. We learn that the spirit is greater than the form, and we take courage."

"There is no nobler sight anywhere than to behold a man quietly and resolutely put away the lower, that the higher may come in to him."

"Moral courage is nothing in the world but just the capacity for doing what we know we ought to do. Give that to every man, and only think with what a stir of eager and vivacious interest this dull world in which we are living would wake and start."

"To be our best, not merely for ourselves, but for each other—that is a noble impulse; that if it were fully carried out, would be the world's salvation."—PHILIPS BROOKS.

## THE SHAKER, AN IMPROVEMENT IN CRUCIBLE STEEL PRACTICE.

BY G. P. BRACKISTON, PITTSBURGH, PA.

The pot or crucible in which the scrap, iron, steel and other ingredients are melted in order to be converted into fine tool steel, is a very important factor to the steel maker. The price of these pots is about \$2.50 a piece, and each can only be used three or four times. Thus they are a very expensive item, and bring the cost of manufacturing tool steel to a rather high figure. Their high price is due to the fact that almost all the ingredients are imported. The clay is brought in hogsheds from Germany, and the black lead is obtained in Ceylon.

As it is not the object of this article to describe the manufacture of these pots, but simply to state the method by which the great steel masters have contrived to lengthen the life of a pot from four to nine, I shall merely touch upon the subject of their manufacture. A knowledge of which, together with that of the old method of handling the crucibles, being requisite to a full understanding of the advantages of the new process.

First, in the making of the crucible pots, a mixture which is composed of certain given amounts of clay and black lead is placed in a large bin on the top floor of the factory. From the bottom of this bin a spout leads into a mixer or cast iron box about 6 feet long and 4 feet in width and depth, in the center of which is a worm, or tool resembling the propeller of a boat. The mixture is allowed to descend from the box or bin on the top story, through the spout and into the mixer on the ground floor, the flow being regulated by a valve. When the receptacle is nearly filled a little water is admitted to make the ingredients of a pasty consistency. Then the worm, or paddle, is set in motion, and the composition is thoroughly mixed. A gate in the side of the mixer is opened, and the contents carried to a vault where the extra water is evaporated, and the mixture allowed to settle. From here it is taken to be molded into the desired forms, and afterward burnt in a kiln to a light brown color.

The pot used by the crucible steel manufacturer is generally of 100 pounds capacity. By the old method it was filled by hand, which necessitated rocking it backward and forward in order to make the charge settle, and then, after being covered by a cap of the same material, was, in turn, placed in the furnace.

After being subjected to the temperature of the crucible furnace, about 3000 degrees C., for a period ranging from three to four hours, during which time the steel, iron and scrap charged into the pot have melted, the latter is removed from the furnace and emptied. Next it is thrown to one side and allowed to cool, the scaly surface which collects upon the outside afterward being removed by a few strokes of a file, and the pot then given several dips in a bath of clay and water in order to replace the coating that was removed. By this treatment it is once more made ready for service, and, as before stated, will last for three or four heats, if this method is followed out after each heat.

To the mind of one of the oldest melters in the country it seemed as if there should be some way to lengthen the

life of these frail vessels, so he began to work with this end in view.

Finally, his efforts were crowned with success, and he now has the honor of seeing his method used universally in the crucible steel mills. The process is as follows:

Upon the arrival of the pots from the factory they are filled, placed in the furnace and withdrawn by the old method, but at this point the great improvement begins. Instead of being thrown aside they are taken by means of a buggy, which resembles a pair of tongs upon wheels, to one end of the furnace, and placed upon the "shaker." This machine, if I may be permitted to term it such, is composed of a cast iron plate 2 feet 8 inches wide, 3 feet long and  $\frac{3}{4}$  inch thick. In the center of one end are pins, seven in number, forming a 10-inch circle. About 2 inches from the circle toward the center of the plate is a small casting forming a pivot.

The pot is placed inside the circle of pins, and an iron ring welded to a perpendicular handle is so arranged that it will snugly encircle the belly of the pot, and the lower end of the handle will rest upon the plate. A groove cut in this end of the handle allows it to fit over the pivot, and thus a man can easily rock the pot backward and forward. By this method the iron, steel and scrap which is poured from a long, narrow pointed pen containing the charge, is settled, or so greatly shaken, that the capacity of the pot is increased.

When filled, it is by means of the buggy conveyed, still red hot, to the hole or furnace, and another is then brought to be filled. In order to have a perfect clock-like movement, one hole is pulled at a time, and when the last pot is turned, or emptied, the others are ready to be placed back in the furnace. As before stated, the life of the crucible is increased to almost ten heats by this method, while by the old process it was only four.

Of course, like everything else it has its disadvantages as well as its advantages, and one of these is the increased temperature due to the constant presence of the pots upon the floor in which the workmen have to labor. Then the pullers out have no time to rest, for no sooner do they "pull out" a hole than they have to "put back." The bottom of the hole also must be fixed while it is hotter than it would be if the old method were used, and the scrap must be cut finer.

But the advantages far overbalance the disadvantages, as there is a great saving in the doing away with the extra labor of cleaning and bathing the pots, and of carrying them to and from the furnace. Besides the period of service of the crucibles is lengthened, because the weakening effect of changes of temperature upon the crucible is avoided.

Some argue that there is no opportunity to inspect the pots, and that there is a great possibility of their cracking in the furnace and losing their contents. This lacks foundation, as a pot can be examined sufficiently during the handling and before it is replaced in the furnace.

Thus it will be observed that the shaker is of great practical value and saves a considerable amount in the everyday manufacture of crucible steel.—*Iron Age*.

REAL happiness don't consist of what a man don't hav, az it duz in what he don't want.—JOSH BILLINGS.

### WORKED IN THE DIXON FACTORY IN 1848.

By further reference to our scrapbook, we learn that the foreman of Messrs. Robinson Brothers & Company's extensive engineering works at Melbourne, Australia, was employed in Joseph Dixon's factory in 1848, and his personal recollections include the sale of the patent right by Mr. Dixon, for England only, to Mr. Morgan.

F. B. Miller, Esq., who was, some time ago, superintendent of the Melbourne Mint, a gentleman of extensive experience in California, had quite a familiar acquaintance with Dixon's crucibles, having been accustomed to the use of them in the silver mines of Nevada away back in the fifties.

At the present day, Dixon's crucibles easily maintain the high and undisputed position they have so long held.

### CARNEGIE AND BRAINS.

After the lapse of fifty years, in which Mr. Carnegie, beginning with nothing and ending with \$300,000,000, after his putting A to Z together, after gathering around him several hundred of the cleverest young men of the business and mechanical world, and the grandest of all time, and getting equipped, inch by inch, so he can undersell the world, a doctrinaire named Wm. L. Garrison arises in Boston, the other day, delivers a lecture to a crowd of people whose fortunes, like his own, can be doubtless counted by dimes, and said Carnegie and his associates did not do this by his brains, or by thrift, or by industry, but because of the tariff, which, he continues, taxes the many for the benefit of the few.

A simple knock-down rejoinder to this is: That when Carnegie began, all steel rails were made in England, and price was above \$165 per ton, and before Carnegie got through he sold them for \$16 a ton and compelled England to follow suit.—JOHN A. WALKER.

### EXCESS OF LUBRICATING OIL IN MOTOR BICYCLE.

In operating a motor bicycle I am troubled with an excess of lubricating oil working past the piston in the motor cylinder. The engine is of a four-cycle, air-cooled type with small crank base, having fly-wheel outside. The piston has three rings on the upper end and is perfectly tight in way of compression. I have tried the machine with a valve to allow free passage of the air out of crank chamber, also with a splash plate. I have used both light and heavy, high test crank case oil, and get better results with the heaviest oil I can get. I would like to know if you can inform me of any way I can overcome this difficulty and still use splash lubrication.—W. A. S.

Ans.—We suggest that you use graphite as a lubricant. This is manufactured especially for the purpose by the Joseph Dixon Crucible Co., of Jersey City, N. J.

—*Automobile Review.*

### THREE PER CENT.

Peter Cooper, the great philanthropist of New York, was one of the most successful, careful and prudent business men of his time. He was strongly opposed to the methods of many merchants who launched out into extravagant en-

terprises on borrowed money, for which they paid exorbitant rates of interest. The following anecdote illustrates the point forcibly. Once, while talking about a project with an acquaintance, the latter said he would have to borrow the money for six months, paying interest at the rate of three per cent. per month. "Why do you borrow for so short a time?" Mr. Cooper asked. "Because the brokers will not negotiate bills for longer." "Well, if you wish," said Mr. Cooper, "I will discount your note at that rate for three years." "Are you in earnest?" asked the would-be borrower. "Certainly I am. I will discount your note for \$10,000, for three years at that rate. Will you do it?" "Of course, I will," said the merchant. "Well," said Mr. Cooper, "just sign this note for \$10,000, payable in three years, and give me your check for \$800, and the transaction will be complete." "But where is the money for me?" asked the astonished merchant. "Your interest for thirty-six months at three per cent. per month amounts to 108 per cent, or \$10,800. Therefore your check for \$800 just makes us even." The force of this practical illustration of folly of paying such an exorbitant price for the use of money was such that the merchant determined never to borrow at such ruinous rates, and he frequently used to say that nothing could have so fully convinced him as this rather humorous proposal by Mr. Cooper.

—*Merchants' Journal.*

THE revival of learning, commercial rivalry and religious zeal in Europe led to Columbus' discovery of America, in 1492. Conflicting territorial claims and parental animosity involved English, French, and Spanish colonists in wars, culminating in English supremacy in 1763. England's oppression alienated colonial affection, induced revolution, hastened independence. Common cause and danger begot colonial union; the weakness of the confederation demanded a federal republic. Party differences tempted legislation. Negro slavery precipitated civil strife, secession emancipation. Federal authority became supreme. Reorganization succeeded. Religious freedom, an unmuzzled press, invention, internal improvement, and universal education have conspired to prosperity at home, and honor abroad.—(*The successful contribution in a competition for a prize offered by "The Pathfinder," Washington, D. C., for the best history of the United States in one hundred words.*)

### A CRY FOR DIXON'S AXLE GREASE.

A firm manufacturing fine carriages bought a small trial package of Dixon's Graphite Axle Grease. The package was sent to the foreman and nothing was heard of the matter until sometime after the graphite was used up. Later there came an urgent cry for "more of that black grease with the shiny flakes in it." Then the firm placed an order for a quantity of Dixon's Graphite Axle Grease, and have had most satisfactory reports.

Dixon's Graphite Axle Grease has as its base Dixon's celebrated Ticonderoga flake graphite. The flakes of graphite form a veneer-like coating on the axles of marvelous smoothness and endurance. Dixon's Graphite Axle Grease is the most economical lubricant that one can use for all vehicle axles on which a grease can be used.

### STRAY THOUGHTS FROM JOHN RUSKIN.

We have certain work to do for our bread, and that is to be done strenuously; other work to do for our delight, and that is to be done heartily; neither is to be done by halves or shifts, but with a will; and what is not worth this effort is not to be done at all.

Right dress is that which is fit for the station in life and the work to be done in it, and which is otherwise graceful, lasting, healthful and easy; on occasion splendid; always as healthful as possible. Right dress is therefore strong, simple, radiantly clean, carefully put on, carefully kept. Beautiful dress is chiefly beautiful in color, in harmony of parts, and in mode of putting on and wearing. Rightness of mind is in nothing more shown than in the mode of wearing simple dress.

No road to good knowledge is wholly among the lillies and the grass; there is rough climbing to be done always.

Do not think of your faults; still less of others' faults. In every person who comes near you, look for what is good and strong. Honor that; rejoice in it; and, as you can, try to imitate it, and your faults will drop off like dead leaves when their time comes.

In the daily course and discipline of right life we must continually and reciprocally submit and surrender in all kind and courteous and affectionate ways; and these submissions and ministries to each other are as good for the yielder as the receiver; they strengthen and perfect as much as they soften and refine.

You will find that the more you resolve not to be useless but to help people, you will, in the quickest and most delicate ways, improve yourself.

The first and last and closest trial question to any living creature is: What do you like? Tell me what you like and I'll tell you what you are.

To know anything about God you must begin by being just.

The spirit is around you in the air that you breathe. His glory in the light that you see, and in the fruitfulness of the earth, and the joy of its creatures, He has written for you, day by day, His revelation, as He has granted you, day by day, your daily bread.

Every noble life leaves the fibre of it forever in the work of the world. By so much evermore the strength of the human race has gained.

I do not in the least see why courtesy and gravity and sympathy with the feelings of others, and courage and trust and pity and what else goes to make up a gentleman's character, should not be found behind a counter as well as elsewhere, if they were demanded, or even hoped for there.

In order that people may be happy in their work, these three things are needed: They must be fit for it; they must not do too much of it; and they must have a sense of success in it.

Without enthusiasm your life will be a blank and success will never attend it. Industry is the secret of success. It blinds us to the criticisms of the world, which so often damp our very earliest effort. It makes us alive to the one single object: That which we are working for. It fills, not with the desire only, but with the resolve to do well whatever is occupying our attention.

### Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, type-writer work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing**.

**Dixon's Plumbago for Powder Glazing**.

**Dixon's Plumbago Foundry Facings**.

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite**.

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Cycle Chain Graphites**, for perfectly lubricating chains and gears of bicycles.

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Anti-Flux Brazing Graphite**, to prevent the spelter from adhering when brazing.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians.**

Special circulars with detailed information sent on request.



### SUBSTITUTE FOR HEMP PACKING.

A novel substitute for hemp packing has been introduced by Mr. Firey, superintendent of the Silver Lake mines at Silverton, Colo. In the stuffing boxes, as a packing and bearing, he is using a compound of chilled shot with graphite or paraffine. As it becomes warm, a little more is introduced, and it has never yet, any part of it, to be thrown away, and is said to do excellent work. The shot must be of such size that it will not work out. Where it is necessary to mould the packing, paraffine is used; otherwise, graphite.—*Mining and Scientific Press.*

### ICH BIN DEIN.

The *Journal of Education* commends the following ingenious poem written in five languages—English, French, German, Greek and Latin—as one of the best specimens of macaronic verse in existence and worthy of preservation by all collectors:

In tempus old a hero lived,  
Qui loved puelias deux;  
He no pouvoit has quite to say  
Which one amabat mieux.

Dit-il lui-meme un beau matin,  
"Non possum both avoir,  
Sed si address Amanda Ann,  
Then Kate and I have war.

"Amanda habut argent coin,  
Sed Kate has aureas curls;  
Et both sunt very agathae,  
Et quite famose girls."

Enfin the youthful anthropos,  
Philoun the duo maids,  
Resolved proponere ad Kate,  
Devant cet evening's shades.

Procedens then to Kate's domo,  
Il trouve Amanda there,  
Kai quite forgot his late resolves,  
Both sunt so goodly fair.

Sed smiling on the new tapis,  
Between puellas twain,  
Coeplit to tell his love to Kate  
Dans un poetique strain.

Mais, glancing ever et anon  
At fair Amanda's eyes,  
Illae non possunt dicere  
Pro which he meant his sighs.

Each virgin heard the demi-vow,  
With cheeks as rouge as wine,  
And off'ring each a milk-white hand  
Both whispered "Ich bin dein."

When the clock strikes three, each stroke is as full and complete as when it strikes twelve. When you undertake a small matter, give it the same good attention that you would a larger matter.

### DIXON'S No. 635 GRAPHITE FOR AUTOMOBILE CYLINDERS.

Messrs. I. G. Tolerton & Son, of Alliance, Ohio, in placing a second order for Dixon's No. 635 Flake Graphite, write as follows:

"It is simply excellent for the cylinders of my automobile, and we also use it for the cylinders of a large engine in our planing mill.

"My automobile is a steam machine and I mix the No. 635 Flake Graphite with cylinder oil and pump it with a foot pump used to lubricate the cylinder.

"In our planing mill the engineer tells me he mixes the No. 635 Graphite with cylinder oil and puts it into the cylinder by means of a sight feed lubricator. He tells me the graphite feeds with the oil very well and thinks the No. 635 Graphite quite an advantage and help in lubricating a cylinder.

"We use the No. 635 Graphite mixed with oil on our fast running journals in our planing mill, where the journals are inclined to heat and the foreman in the mill tells me he finds that the graphite is just what is needed where fast running journals are inclined to heat."

### STUCK AND FAULTY VALVES.

If not overlubrication, then by "the inherent evil due to lubrication," as one rider puts it, too much oil is sometimes thrown onto the valve and trouble results. So long as the valve remains hot, little, if any, trouble results, but as the parts cool, a partial baking of the sooty oil takes place, and the resulting crust checks the valve from parting instantaneously from its seat.

An excellent preventative and a good cure is to thoroughly rub into the seat and valve a finely powdered pure graphite. The graphite fills the microscopic inequalities of the metal, making not only a more perfect fit, but surfaces to which sooty matters do not readily become fixed.

A DULL boy came to the Adelphi Art School in Brooklyn. His train of thought was so peculiar that Prof. John Whittaker, who for more than a quarter of a century has been engaged in developing Brooklynites to be artistic, gave up all hope with that boy.

"Did you ever see a man's foot with six toes?" asked Prof. Whittaker, irritably glancing at the drawing board on which the young man had been trying to draw a foot.

"Don't know as I did," drawled the boy.

"Then why do you draw that foot with six toes?" demanded the Professor, more irritated than ever.

"Because your old cast of a foot has six toes," replied the boy. An examination proved this to be a fact.

"That boy is a successful artist now," remarked Prof. Whittaker, "and his success in life came from drawing just what he saw. If I could get boys who would draw six toes on a foot, if six toes showed on the cast, I would turn out more artists."

### LEAD PENCILS.

Everybody uses them.

Everybody loses them.

—SAM MAYER.

### THE OTHER KIND.

In July "GRAPHITE" we printed some verses found posted on bulletin board in the small town of Coatesville, Pa. The title was "Not Traveling Now."

The verses described a drummer who was wondrous good and who would not even let the barber shake bay rum on his head; and who never smoked; and who never told even a little lie; and who never did any of the wicked, wicked things that some drummers are supposed to do.

Those verses have caused an unknown Boston poet to describe "The Other Kind." As our Boston friend does not sign his name, we cannot place it among our immortals.

#### THE OTHER KIND.

I also knew a drummer once,  
And he was tough as tripe,  
And in our city prisons  
There are many of his stripe.

He always took a bracer  
As soon as out of bed,  
And not for years did he awake  
Without he had a head.

He smoked and chewed from morn till night,  
The wheel he did not shirk,  
And when he saw a pretty girl  
He said good-bye to work.

He never saw inside of church,  
But played the game all day,  
And simply charged it to expense  
When it didn't come his way.

He ne'er was known to tell the truth,  
But merely sold on bluff,  
And when he was out for orders  
He blew the firm's good stuff.

But when he took his second trip,  
And tried store goods to sell,  
The first-trip suckers called his bluff,—  
He's trav'ling now to H—ll.

Editor GRAPHITE: Did you ever strike one like above?  
I have. Dammum!

### GET OUT OR GET IN LINE.

If you work for a man, in heaven's name work for him.

If he pays you wages that supply your bread and butter,  
work for him; speak well of him; stand by him and stand  
by the institution he represents.

I think if I worked for a man I would work for him. I  
would not work for him a part of the time and then the  
rest of the time work against him. I would give an undi-  
vided service or none.

If put to the pinch, an ounce of loyalty is worth a pound  
of cleverness.

If you must vilify, condemn and eternally disparage,  
why, resign your position, and when you are outside, damn  
to your heart's content. But, I pray you, so long as you  
are a part of the institution, do not condemn it. Not that  
you will injure the institution—not that; but, when you

disparage the concern of which you are a part, you dispar-  
age yourself.

More than that, you are loosening the tendrils that hold  
you to the institution, and the first high wind that comes  
along, you will be uprooted and blown away in the bliz-  
zard's track, and probably you will never know why. The  
letter only says: "Times are dull, and we regret that there  
is not enough work," *et cetera*.—ELBERT HUBBARD.

### A VOICE FROM A CLEVELAND SCHOOL HOUSE.

I received a box of pencils  
From your firm the other day;  
For this kindly gift and welcome,  
Sirs, accept my thanks, I pray.  
Did you know the sad September,  
When the summer waxes late  
And the teacher's wallet reaches  
Its very thinnest state?  
When the car-fare is a burden  
And the pencil is a stub,  
And the necessary nickel—  
Where to get it, that's the rub?  
Whatsoever motive prompted,  
I am certain that I ought  
To express my satisfaction  
With your very generous thought;  
And I'll tell my pupils: "Children,  
When you write your billydoos,  
I assure you, Dixon's Pencils  
Are the ones that you should use."

—M. H. P.

### ALL RIGHT!

No matter whether it is a Frenchman, a Russian, or a  
Turk that you hear talking: it is only a question of time  
before you will hear the word "All right!" "All right" is  
a very comprehensive word,—it is so recognized the world  
over, and it creeps into every language. There is no better  
word to use in describing Dixon's American Graphite  
Pencils. They are all right in every particular. The uni-  
formity of grading is all right. The wood is all right, for  
it is the straight-grained Florida cedar. They are all right  
for American schools and all American business offices, as  
they represent American materials and American labor, and,  
like the word "All right," they are used by foreigners  
throughout the world who appreciate fitting words.

### LUCK — HOW TO GET IT.

Luck is of your own making. Luck means rising at six  
in the morning, living on one dollar a day if you make two,  
minding your own business and not meddling with other  
people's. Luck means the hardships and privations which  
you have not hesitated to endure; the long nights you have  
devoted to work. Luck means the appointments you have  
never failed to keep; the trains you have never failed to  
catch. Luck means trusting in God and your own resources  
—a religion whose motto is: "Help yourself, and Heaven  
will help you." Luck comes to them who help themselves  
and know how to wait.—MAX O'RELL.

# REPRODUCTION

## OF AN OLD-TIME CIRCULAR, PRINTED ABOUT THE YEAR 1848.

### JOSEPH DIXON & CO., JERSEY CITY, N. J.

**DIXON'S BLACK LEAD CRUCIBLES** were the first reliable Melting Pots ever made, and have now been in market **THIRTY YEARS**. They have become known throughout the United States and Europe as the *best and most reliable* to be had. We will warrant every Crucible to work with perfect safety, until fairly worn out, without regard to the degree of heat, sudden change of temperature, or the number of days or weeks they may be in use.

*The following are among the many Testimonials they have received in Europe.*



"Having adopted your Black Lead Melting Pots, for the last few years, we are so highly satisfied with their quality that we should, on no account, think of using any others, finding them more efficient, less liable to crack, and a great saving in time. We have much pleasure in stating that they work to our entire satisfaction. 50,000 oz. and upwards have been melted in one 1000 oz. Pot.

We are yours truly,  
(Signed,) **BROWN & WINGROVE,**  
Refiners to the Bank of England."



*From the Master of the Mint, Paris.*

"These Crucibles possess qualities never hitherto approached. Each Crucible runs from forty to sixty pourings, and can with safety be dipped in cold water when at a red heat, and used again immediately, as if it had not undergone any change of temperature. All the Crucibles, I have had, last an entire week, and we never have an accident, they literally wear out, &c., &c., (Signed,)"

**CHARLES DIERICKX."**

*From the Director of the Eysenrood Works, the largest in Rotterdam, Germany.*

"For three months we have used these Plumbago (Black Lead) Crucibles, and we shall never use any others, as they very far surpass all in their durability. — The superiority, in addition to the durability, consists in their never cracking in the furnace, which prevents the danger of losing the liquid metal, a circumstance that often happens with the ordinary Pots; thus, for example: in a No. 35, we

have melted 1239 kilos, (nearly 3,000 lbs.) consisting of pieces of cannon and copper, whilst to melt the same quantity of metal would have required, at least, seven or eight German Pots.

(Signed,)"

**M. D. CRISTIE."**

Mons. Gilian, Engineer, Tirlemont, in Belgium, writes to the Agent for the sale of these Crucibles in Brussels, that "there is no kind of comparison to be made between them and the German, which are very uncertain, and only average four heats, whereas these melt generally about forty-eight, also, they really hold the quantity stated, &c."

**We keep a large quantity in stock of all sizes, from No. 3 to 100, which are warranted to hold two pounds to the number, and will make to order, as speedily as possible, Crucibles of any desired shape, Assay Furnaces, Muffles, Retorts, Ladles, or any other apparatus required for metal melting or chemical research. Covers may be had for any size, at one fourth the price of the Crucible. These Crucibles should be kept in a dry place, and should be heated up gradually the first time using, but they require no other care. Orders may be addressed direct to the Factory, or to our BRANCH OFFICE, No. 191 BROADWAY,**

(CORNER OF DEY STREET,)

**NEW YORK.**

MOOREY & HAGAR, Printers, Nos. 14 & 16 Ann St., New York

The above circular is from the original in its "sear and yellow leaf," which we find in our scrap book. Our present New York office is 68 Reade Street.

In 1848 the Dixon Crucible was a "world beater," and now, 55 years later, the Dixon Crucible is still regarded as the standard the world over.

# Graphite

VOL. V.

OCTOBER 1903.

No. 11.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

*COPYRIGHTED 1903 BY THE JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.*

## AN EXPERT RAILWAY ENGINEER'S OPINION OF DIXON'S FLAKE GRAPHITE.

In an interview at the Convention of Travelling Engineers with Mr. Mark Floyd, who has been an engineer for over thirty years on the Lake Shore and Michigan Southern R. R., and who is at present running on the Twentieth Century Limited, which is the fastest train in the world, between Elkhart and Chicago, we found him very enthusiastic in his approval of Dixon's Pure Flake Graphite for use on the various parts of a locomotive.

In 1893, Mr. Floyd was running what was considered in those days one of the fastest locomotives in existence; the drivers were sixty-six inches in diameter. With this he broke the world's record at that time. The present iron horse which pulls the Twen-

tieth Century train has drivers 80 inches in diameter.

On the run between Elkhart and Chicago, he has several times traversed the 101 miles of distance in 97 minutes. This includes fourteen slow-ups at crossings and two stops.

His first experiments with Dixon's Graphite were made before the Chicago fire in 1871, and he was the first engineer on the Lake shore road to use it. His records in saving of oil and coal (by the assistance of graphite) were so marked that it attracted the attention of other engineers and superior officers, and since that time there has been a steady increase in the amount of Dixon's Graphite used on the Lake Shore. It has helped him out of many a tight place. When weather conditions have been serious, and when the grease has become solidified from the cold, a little graphite and oil works wonders.

We have his authority for saying that it is impossible to over-estimate the advantages gained by its use and he has recommended it to all his fellow-engineers.

## ADVERTISING IN THE FORM OF A STORY.

The Joseph Dixon Crucible Company have just issued a new pamphlet advertising their graphite pipe-joint compound. This takes the form of a story into which mention of their graphite compound is artfully worked.

—*Architect's and Builder's Magazine.*

## FOR "AULD LANG SYNE."

We have, from time to time, published interesting letters from customers and friends which touch on mutually pleasant matters outside of business; but, never before, that we can recollect, have we published a letter from an oldtime friend of thirty-eight years standing.

The following letter was of special interest to us, and, we think, will prove interesting to our readers:

COMPANIA LIMITADA DEL FERROCARRIL.

CENTRAL MEXICANO,

OFFICINA DEL INGENIERO EN JEFE,

LEWIS KINGMAN,

Ingeniero en Jefe.

CITY OF MEXICO, May 29th, 1903.

JOSEPH DIXON CRUCIBLE COMPANY,

Jersey City, N. J., U. S. A.

*Gentlemen:*—Answering your letter of May 23d, I beg to acknowledge the receipt of the celluloid ruler. Your traveling representative, Mr. R. A. Brown, called on me last year and gave me a good lead pencil. I do not suppose you remember me, but between January and March, thirty-eight years ago, I called at your works and looked over your plant and carefully observed most of the operations performed around the yard and buildings. At that time I was a young engineer, employed by Hamilton E. Towle, No. 78 Cedar street, New York, diagonally across from the old Dutch Church Postoffice, quite near the centre of business at that time.

Now, I remember you quite kindly, as I was not fired out and was treated nicely, or, at least, let alone, and saw all that I wished to, for all of which, at this late day, I thank you. I presume I might have been slightly in the way, but presume I did not cause you any loss or inconvenience.

Yours truly,

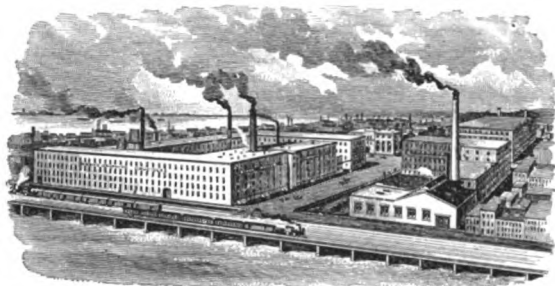
(Signed) LEWIS KINGMAN,  
Chief Engineer.

It is said that the veteran showman, Dan Rice, had a goose he tried to train, but the more he labored with the goose the less the goose knew, and so it is with some boys, and to attempt to retain these boys is a waste of time and expense. Keeping such material is what fills the market with inferior mechanics, who are dear at any price. They are better qualified to run a wheelbarrow and a pick and shovel than to work at anything that requires judgment and skill.

ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

### BRANCHES AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Morigen (Switzerland), Finland, Havana.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., October 1903.

### OUR PICTURE GALLERY.

From time to time the Dixon office has reminded its salesmen that it would be nice to have a picture of each one. There is nothing like having things handy in case of need.

We have not been able to obtain pictures of all our young men—whether because of excessive modesty or some other good reason, we do not know, but such as we have “there is not a fly on one of them,” as Vice President Walker said when he saw the group and read what the phrenologist had written.

We thought it might be interesting to the Dixon boys if they could see themselves as pictured by the character reader of the world-wide known phrenologists—Fowler & Wells of New York, so we directed that the pictures of the young men be sent over, and, in order that no clue might be given, a number was given to each picture instead of a name. The names have been added since we received the “readings.”

Through an error of the clerk who sent over the pictures, that of Joseph Dixon and the officers and four of the Dixon superintendents were included. When all were returned, our General Manager decided that officers and superintendents might just as well stand up and face the music as the Dixon salesmen. So here we are altogether, tagged and numbered.

As to our young men, the “readings” show that we made no mistake in selecting them as Dixon representatives. No concern has a more faithful and united band of workers.

### THE INVICTUS GRAPHITE LUBRICATOR.

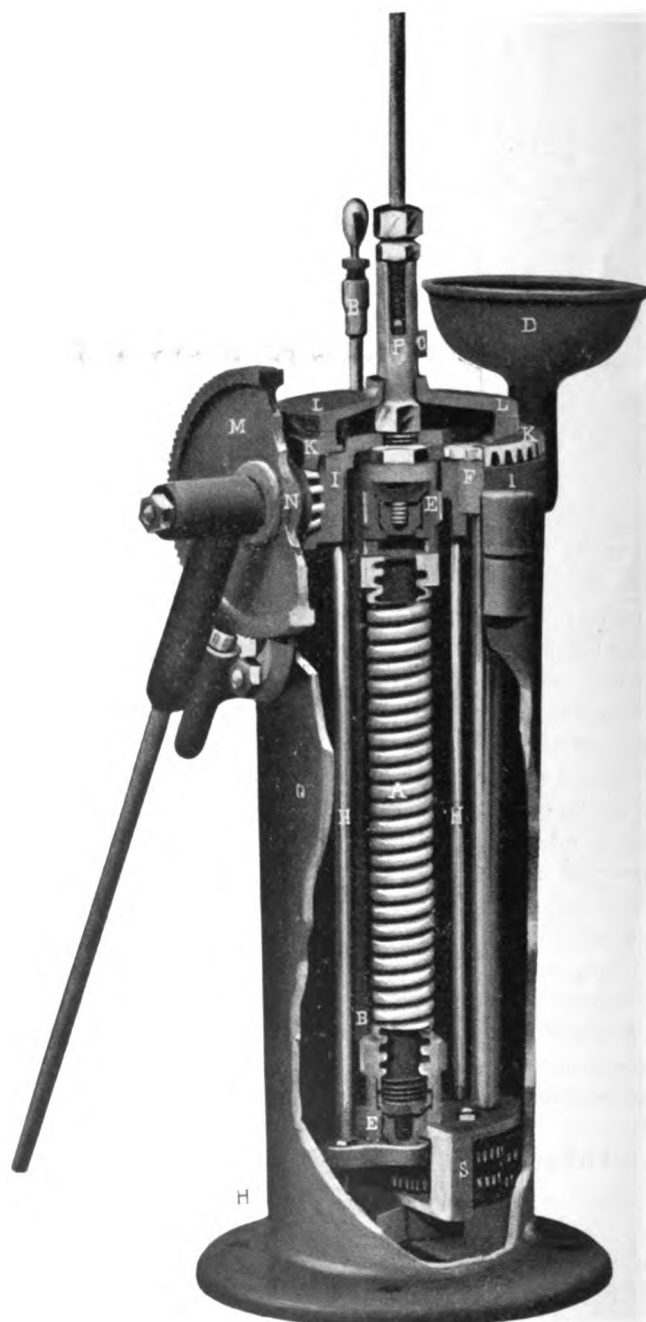
In GRAPHITE for June last, we reproduced an article from *The Horseless Age*, relative to the lubricator made by Mr. F. Hiorth of Christiania, Norway. Mr. Hiorth has very kindly furnished us with his descriptive circular and we reproduce it herewith in full, as we have no doubt it will interest our readers:

The graphite lubricator Invictus 1, 2 and 3, price £8, holding about  $\frac{3}{4}$  gallon, supplies for every tooth and 100 revolutions per minute,  $\frac{1}{4}$ ,  $\frac{1}{3}$  and  $\frac{1}{2}$  pint respectively, per day of 10 hours.

Cylinder oil, at one-fourth of the price of the so-called first-rate article (pure mineral oil without any addition of fat with a minimum point of inflammation and ignition of 210 degrees) is to be filled into the holder as required.

The float gauge indicates the height of the holder.

The finest flake graphite is to be added to the oil once a day in the proportion of three tablespoons to every quart of



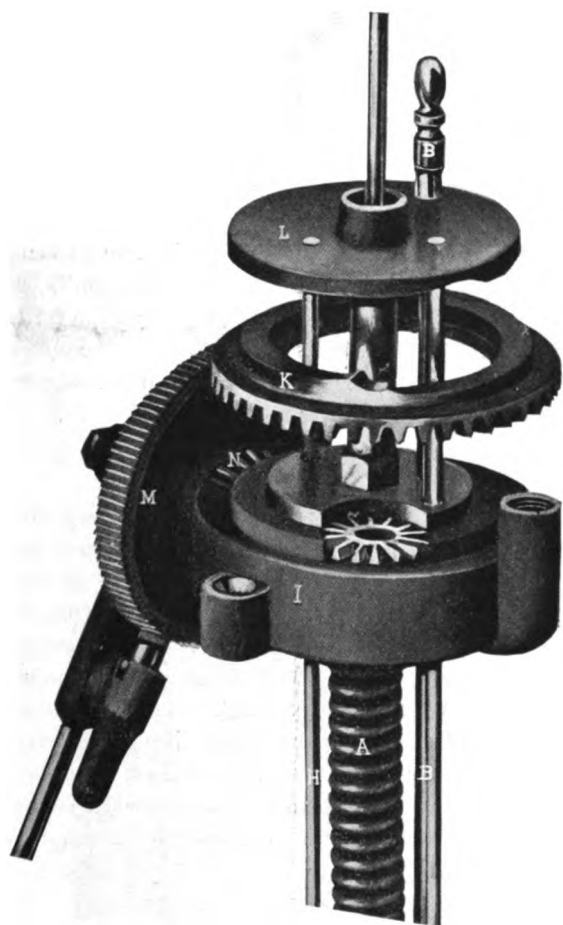


oil required by the engine. If more graphite than the daily consumption is put in at a time, stoppage may follow. If, for instance, the engine requires two quarts of oil per day, six tablespoonfuls of graphite are to be poured into the holder, and so on. The graphite, being of greater specific gravity than the oil, sinks to the bottom, when it is stirred by the propeller and is then fed into slides and cylinders.

During the first few days, use the same feed that the engine would require with cylinder oil, then reduce one-half.

The hand pump B is to be used: 1. When the engine requires extra feed. 2. To fill the pipes the first time the lubricator is mounted. 3. When the cistern O has been pumped empty, air enters the pump barrel A and obstructs its functions; five pump strokes will suffice to remove the air. The screw C, beneath the stop valve P, is used in testing the graphite mixture.

The graphite lubricator Invictus reduces the cost of lubrication by two-thirds, thanks to the use of cheaper oil and less quantity, the engine being, nevertheless, better lubricated.



How does the Invictus work? On a very simple principle: As a pump without packings or pump rod. The spring barrel A, with double valve boxes at each end, is fastened in the frame work I. Through the up and down movement of the lid L, caused by its eccentrics, corresponding to those of the tooth wheel K and by means of the braces H, the spring barrel A is compressed and extended by turns. The power required for the purpose, as well as for the stirring of the graphite and the oil, is derived from the ratchet wheel M which, by means of the bevel gear N, turns the

tooth wheel K, and this again turns the tooth wheel F, which puts the clock-works S with its propeller in motion.

Why is graphite recommended for lubricating cylinders?

Because graphite is, in itself, an excellent means of lubrication which, when joined to a fluid that renders its conveying to the cylinder possible, is unsurpassed by any other. So-called cylinder oil is being offered for sale at prices ranging from 3d. to 1s. 6d. Yet, all cylinder oil saturated with fat, whether animal or vegetable, contains more or less acid which affects the material of the various parts of the engine. On the other hand, in using graphite, the principle of all cylinder oil, Bakuin—absolutely free from acid—is sufficient, and the effect of graphite on the various parts of the engine is simply marvelous. It reduces friction to a minimum, fills every pore and covers the surface of the material of the engine as well as packings with a tightening coat, being thus economic, above all, by reducing friction, but also by reducing the cost of packing. Lubricated with graphite, the engine no longer wears away the material but the graphite coat. Take, for instance, the piston. How often it is found striped and worn between the points where it works. How often owners of engines are heard saying, "Now I have had my cylinder rebored and fresh springs and piston rod set in"—all of which is the result of incomplete lubrication. How much have these repairs and renewed packings cost? Above all, what has the friction cost in the course of years? Say, 5% of the average coal consumption for all engines. But, when you consider that a railway train may be stopped by a cylinder running dry, it stands to reason that there are many degrees between this eventuality and the least possible friction.

Therefore, always lubricate the cylinder of your engine with the graphite mixture.

Why, then, has graphite not come into use before? Simply because it has been found difficult to convey it to the cylinder, graphite having a specific gravity of 1.9 as against the 0.92 of the oil, and when used dry it has become sticky from the effect of the vapor.

Through the graphite lubricator Invictus these difficulties have been overcome, because it fetches the oil from the bottom of the cistern, where four constantly stirring wings are at work.

#### DIXON'S PENCIL INDEX.

This is not an index *expurgatoris*, but an index published by the Joseph Dixon Crucible Company, Jersey City, N. J. It is ably written, compiled, or whatever we choose to call it, and starts out with the artful remark that "The world turns so fast in these twentieth century days and the hours are so crowded with interests that we shall not ask, nor expect, any one to read this little book from cover to cover." Of course, after that, we read every line of it "from cover to cover," and find that we are well repaid for the reading by the amount of information contained. The booklet gets its title from the index of every kind of occupation using pencils, so that the individual, whatever work he or she may do, needs only to turn to the indicated page to find the description of pencil most suitable.

—*Stoves and Hardware Reporter.*

# ECHOES FROM THE CONVENTION OF SUPERINTENDENTS OF MOTIVE POWER AND MASTER MECHANICS.

"I have used Dixon's Flake Graphite mixed with Galena oil which I put in the oil boxes of passenger cars with a paddle. I also used the graphite with valve oil for centre plates of passenger cars. Graphite is the best thing in the world for lubrication."

"At one time I was on the Florence and Cripple Creek narrow gauge Road, which has a curve of 32 degrees, and the action on the center plate was very severe; we could not get a grease or oil to stay. After six or eight months of severe service, I found some of the Dixon lubricant remaining on the plates."

"We use Dixon's Flake Graphite with oil for lubrication. We also find it very useful for turn plates and for this work use about half a pound at a time—dry."

"In some cases I consider Dixon's Flake Graphite an absolute necessity. We mix it with a little oil for lubricating cylinders of locomotives and dry for screwing on nuts."

"We always have a can of Dixon's Flake Graphite on hand. We find it particularly useful for applying to bolts, making it easy to remove them whenever necessary."

"We use considerable of Dixon's Flake Graphite mixed with oil for lubrication and find it very useful. It is also very good for couplings of air hose."

"If there is any of Dixon's Flake Graphite in the shops, the men will surely get it. When I ran an engine myself, I used to buy it with my own money. It is a great thing to keep journals running smoothly and to prevent heating. One must avoid using too much, for it will clog in the waste and prevent the oil from working well."

"Dixon's Flake Graphite is first-rate for lubricating engines. A cup made by the Detroit Lubricator Company is now being used to good advantage."

"Our firemen are now using Dixon's Flake Graphite on the front ends of locomotives. It looks better and wears better than any paint. We use it with valve oil for lubrication."

"I have used Dixon's Flake Graphite for fifteen years and recently gave an order for some. We mix it with oil for lubrication. We had trouble with a hot box recently, but some of your graphite cured it quickly. We could not get along without it."

"We frequently buy Dixon's Flake Graphite. Everyone of my engineers carries a can of it in his cab. They do not put on a nut without using it. They know that some day they will have to remove the nuts and would have to split them were it not for the graphite, which makes removal easy. We have a slow-running road and so do not require much graphite for lubrication, and we soak our waste in oil for four days and after letting it drain off sprinkle on Dixon's Flake Graphite."

"We use Dixon's Flake Graphite in oil for lubrication and it gives good satisfaction."

"We let our men use Dixon's Flake Graphite freely. It is most satisfactory."

"My men use Dixon's Flake Graphite and it must be all

right, for I never heard a complaint and they are still using it."

"Yes, indeed, we use Dixon's Flake Graphite for lubrication. It is all right."

"We have used considerable of Dixon's Flake Graphite and find it very useful as a lubricant."

"We use Dixon's Flake Graphite with oil for lubrication. It is all right."

"I use Dixon's Flake Graphite for lubrication and there is no question about its being very good."

An oldtime master mechanic, who has now retired but who attends all the conventions, said he used considerable Dixon's Flake Graphite for lubrication and for cooling hot bearings. He said Dixon's Flake Graphite in the dry state would almost take the place of oil.

One of the most prominent and best known railroad men says he has for many years recognized the fine qualities of Dixon's Flake Graphite.

A master mechanic said he had used Dixon's Flake Graphite for packing the boxes of new engines. They first soak the waste in oil and then cover it with a coating of graphite.

Another master mechanic said: "We use Dixon's Flake Graphite dry on the cylinders. We pass it through the relief valve in dry form and it scatters perfectly, while with oil it does not go as well. There is enough moisture in the cylinders to take care of the flakes."

A superintendent of motive power said that he had used Dixon's Flake Graphite for a long time for lubricating and he was loud in its praise. He added, with a smile, that he considered himself a Dixon representative in the far South.

Another master mechanic said: "Dixon's Flake Graphite is great stuff. We never turned out any of our big engines without placing it in driving boxes and cylinders."

## A WONDERFUL MACHINE.

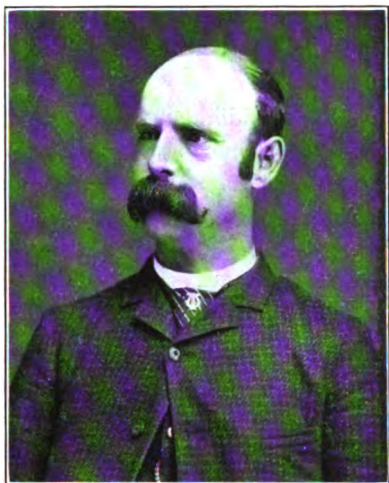
A beginner on the linotype machine can exceed the speed of hand composition from the first hour. In a week he should be a passable operator, and in a month an expert.

There are now over 2,000 printing offices in the United States using standard linotypes. Over 800 offices are single machine plants and the total number of machines in use is upward of 9,000. It is estimated these machines now do four-fifths of the composition done in this country.

For the perfect working of these machines, Dixon's Graphite No. 635 is almost indispensable. It prevents "whiskers" and keeps space bands and other parts smooth, dry and perfectly lubricated.

UNFORTUNATELY for the world, the planet seems to be filled with nervous people, many of whom are writers. Now, as if Fate foresaw the result of the rush and tumble of the *fin de siècle* scramble for wealth, or the demands made upon the salaried man who has to make his living with his pen and pencil, the Joseph Dixon Crucible Company of Jersey City, has created an "Eterno" pencil, which writes so smoothly and beautifully that the man constructed wholly of nerves may use it almost, one might say, as a sedative. If you are nervous, try the "Eterno."

—*Lake Placid Life.*



J. FRANK DRAKE, Salesman in the South and Southwest.

*No. 1.—An Organizer.*

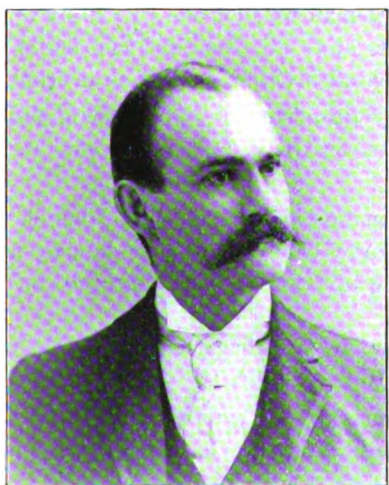
The photograph of this gentleman indicates that he thinks about what he does. He has a reason for all his plans and consequently gets through more work by dove-tailing it all together.

He makes one journey do for two errands and does not waste energy, strength, time or money, but knows how to conserve and economise in each of these respects.

He sizes a man up as soon as he sees him and his conjectures are generally correct.

He knows how to condense what he has to say into a short space of time and shuns the wordy or fluent business man as one who does not know how to make the most of his time.

He is very intuitive, thoughtful, firm, persevering and energetic.



JAMES G. ALLEN, Manager San Francisco Branch.

*No. 2.—Artistic, practical Business Man.*

This gentleman ought to show good taste and be able to refine and perfect his work.

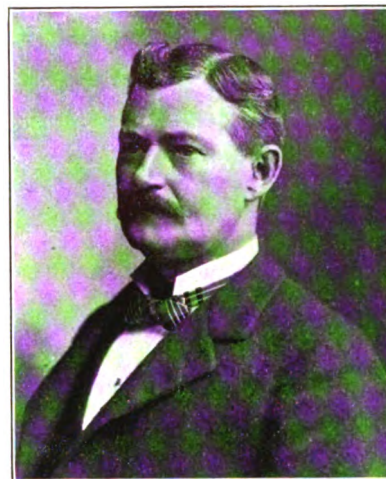
He knows how to superintend artistic designs and should be a neat penman, and show order in his business habits. He is very particular how he does his work, and rounds off the edges and smoothes the rough places in an original way.

He is highly sensitive to criticisms and tries to work so that he need not receive any adverse ones.

His ambition stimulates him to do his best in everything. He carries a kind of French air about him which is high-toned and refined.

His language is select in quality and always appropriate, and he has a keen eye for everything that is taking place around him, and is persevering and self-reliant in his efforts.

He should be a fine critic, show excellent taste as a business man and be a pleasing salesman.



JOHN H. BAIRD, New York Salesman and Advertising Manager of the Stove Polish Department.

*No. 3.—A thoroughly practical Business Man.*

This gentleman is a man of considerable experience and what he says carries weight.

He is thoroughly practical and takes a common sense view of things, and does not stop to theorize about things, but examines them in a utilitarian and scientific way.

He learns by experience, rather than from the methods of others, and in this way his advice comes with more weight because he knows what he is talking about.

He is thorough in what he does and prefers to depend on himself rather than upon others.

There is no artificialism about him. He is thoroughly genuine in what he does and means what he says. His opinions are firmly fixed; he does not alter them much except when he sees he can improve them.

He hits the nail on the head every time he tries to do so.

Lockport, N. Y., Sept. 1, 1903.

Gentlemen:—Yours of the 29th inst. and samples received. Thanks. Have tried your ETERNO copying pencil in both office and search work, and it gives eminent satisfaction, being the acme of pencils for general business use.

In Buffalo I usually make cash purchases of such supplies as we are out of in your line, of Peter Paul Company, 48 Main Street. When purchasing will ask for your goods.

Very truly,

C. H. MACDONALD,  
Niagara Guaranty Search Co.



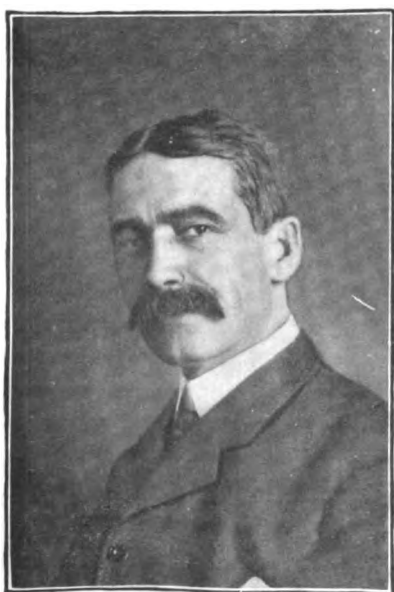
JOHN A. TRACY, Superintendent Pencil Factory.

*No. 4.—An artistic and literary Business Man.*

This gentleman is well built and is always ready to take responsibilities and see them carried out.

He has his gun cocked ready to fire, and although he is not rash or inclined to run any risks about which he is not sure, still, when he has his plans fully made, he pushes ahead. He is a balance to other men who are premature in forming their judgment, and ought to show artistic ability from a business standpoint, and be able to regulate a business on artistic principles. Ideality and constructiveness, located in the temples, help him to decide on artistic matters.

He has also some intellectual ability and could put it to good account in writing up advertisements or in correspondence. He can adapt himself to many men, no matter how different their character may be.



R. A. BROWN, Salesman for Foreign Countries.

*No. 5.—Thoughtful, deliberate, painstaking Business Man.*

This gentleman will be worth more for his plans than he will as a practical partner to carry into effect what he plans out in his office.

His memory by associations is better than his memory of names and details. His health has some influence over his verbal memory.

He is a man of considerable order and likes to have everything done with precision and mathematical care, but he likes to take his own time in doing his individual work.

He knows how to conserve his energy and work quietly without a great deal of demonstration or bustle.

He is very quiet and unobtrusive, as well as keen and intuitive in his way of dealing with men. He does not often get out of temper or show fits of passion, but those who work for him have to be up to the highwater mark in order to satisfy his requirements.

Hence, he will be thoughtful, considerate, far-sighted and undemonstrative as a man among men.



GEO. E. LONG, Secretary.

*No. 6.—An expert, wide-awake, intuitive, executive Business Man.*

In this gentleman we find one who has a very responsive nature. He is alive all over, and can see mentally what is going on behind his back as well as in front of him.

He is a very intuitive, far-sighted man, and is energetic, forceful and executive in his way of conducting his business.

He has a magnetic type of mind, which shows itself through his large benevolence and human nature; hence should be able to bring men to his terms rather than the opposite.

It does not take him long to make up his mind on even important matters when he has all the facts before him.

He is a man of ready wit and has a keen, calculating and penetrating mental eye, which takes in everything that is passing on around him.

He is exceedingly versatile and can attend to and superintend many departments of work in a remarkably short space of time.

He has an excellent memory of faces, facts and events.

He can set men to work and judge of their capacity without reading their testimonials.

His sympathies are easily touched, but he can control them and regulate his emotions.

He would be able to take the lead, direct and control a business enterprise with more than ordinary energy.





E. F. C. YORSE, President.

*No. 7.—An affable, comprehensive, energetic Business Man.*

The photograph of this gentleman indicates that he has inherited some of his constitutional elements from his mother, especially his vital temperament. This gives to his nature a warm and genial disposition. He is able to make friends readily and increase business considerably through his capacity to approach men in a friendly business way.

He apparently has "no rooms to let," as the saying is, in his cranium. Everything he does has to be executed with a certain degree of excellence.

He is artistic as well as mathematical in his calculations and things come out just about as he anticipates or reckons they will, as he has good financiering capacity.

He is a far-sighted man, a good talker and knows how to present his knowledge in a thoroughly entertaining yet business-like way. He is full of push and energy. He is public spirited. He cannot be limited to a small area of business.

His sympathies are easily enlisted, and he sees possibilities where another person would not.

He is a very resourceful, versatile man.



JOHN A. WALKER, Vice President, Treasurer and General Manager.

*No. 8.—A wiry, expert, available, pushing Business Man.*

This gentleman has a keen, clear, critical, intuitive, thoughtful business head on his shoulders.

He is sufficiently cautious to look ahead and prepare for emergencies.

He has more plans in his mind than he will ever execute, even if he lives to be as old as Methuselah.

He has what we call a wiry organization, and therefore can knock off work with dispatch and regulate his affairs with a certain amount of expertness. He does not take longer to do a thing than the work warrants. He cuts and dries what he says and boils things down to an essence in a general way, but when he begins to enlarge on a subject, ideas grow under his hands.

He knows how to size men up and calculates pretty closely what they are worth.

His moral brain makes him a just man, and, while his sympathies are keen, yet no one finds him wasting anything. He can turn over dead material to a good account better than most people are able to do.

He is shrewd, energetic, liberal minded and greatly enjoys a good joke and plenty of fun in its place. Nothing escapes him. He has decided literary tastes and could put them to the test any day, either for a business purpose or for an ethical cause.



GEO. H. REED, Educational Department.

*No. 9.—A reliable and substantial Business Man.*

This gentleman is a thoroughly substantial business man. He can be relied upon in every department of his work. No one goes to him without getting some satisfaction in return, even if he does not give them exactly what they ask for.

His sympathies are broad and wide-stretching. He takes an interest in the success of a business from a two-fold standpoint—one to make it prosper, and secondly, to make it reliable and secure.

He is a painstaking man and has always been known to carry out his agreements with others.

He takes pride in everything he does and his aims are above the average business man who wants to make business without considering how he does it.

His consistency of conduct makes people feel they can depend upon his estimates, his valuations and his investments.

Young men can do well to study his example and follow his advice. There is a correlation between the various parts of his brain, as well as a harmony between the working of his body and mind. He is not so demonstrative in what he says, but is always reliable.





F. ENGELBRECHT, Supt. Lead Making, Graphite Brush and Graphite Resistance Department.

*No. 10.—A well-balanced Organizer.*

This gentleman has a well-balanced organization and is a man who can attend to many things in one day without becoming confused. He is not easily upset or excited and can carry responsibility without showing the irksomeness of it.

He knows how to smooth down the rough edges and can quiet an argumentative critic by soothing his client's ruffled temper more easily than the majority can. This does not say that he is lax in carrying out his duty, but he knows how to adjust his work to the ways and conditions, the customs and manners, the modes and habits, the desires and requirements of those around him.

He is economical, reserved, tactful and courageous or fearless, when it is necessary to show these characteristics.

He will be known for his ability to adapt himself to modern ideas and improvements. He is always on the lookout for something that is novel, artistic and useful.



SAM. MAYER, Manager Chicago Office.

*No. 11.—A scientific, perceptive, observing Business Man.*

This gentleman's photograph indicates that he is a scientific, perceptive, observing man.

He does not allow the grass to grow under his feet.

He possesses a watchful eye that sees the things that he

is intent upon watching. No one can deceive him or make him believe a thing is different from what he has seen it to be when he has examined it.

His perceptive faculties yield more than an average degree of intelligence, and, with his executive abilities, his ready mind to adjust materials as well as ideas, he is prepared to enlarge the scope of a business in a decided way.

His intuitive power is quite marked and he should be able to act as a kind of overseer, inspector, or critic of work ready to be sent out from the establishment.

The height of his forehead in the centre indicates this intuitive power of his, which helps him to interpret character aright; thus he will be known for his practical, intuitive and shorthand method of doing things.



D. A. JOHNSON, Asst. Manager Chicago Office.

*No. 12.—A clear-headed, expert, artistic Business Man.*

This gentleman is a clear-headed, expert business man who can see further than many, and who does not need so many details to guide him in forming an opinion concerning his work and that of others. He is what is sometimes called "level headed," and is quickly impressed with the importance or the appropriateness of things.

He possesses an excellent memory of what he has seen or heard; even years after he has been to a place he can recall it, or if he meets a man whom he did business with years previously, he can recall almost every item of his conversation.

He is quite artistic in his tastes, has an eye for beauty, style and culture.

He could succeed where he had to give judgment upon the best textures, superior fabrics or ornamentation of any kind. He could select artistic wallpapers, carpets, magazine covers and decorations of various kinds on a large scale, and compare their cost and beauty.

Calgary, N. W. L., Canada, Aug. 31, 1903.

Gentlemen:—I have pleasure in saying that your Dixon's ETERNO pencil is by far the best for copying I have ever used, writing very clearly and just the proper hardness.

Yours truly,

A. ALLAN.



JOHN M. READY, Manager New York Branch.

*No. 13.—An excellent Salesman and a good Talker.*

This gentleman has a genial disposition and is able to fit himself into many gaps made by others who are not regular in their work; while some men can only do one thing and do it well, he can suit himself to many conditions and kinds of work, and on this account he should be valuable as an all-around business man.

He takes an extended view of a subject, is quite dainty in the use of his fingers and knows how to appropriately work off old stock.

His forehead is high and he appears to generate a good many bright ideas, though he is not conceited over his way of presenting them, as some people are, when they think they can beat another with a new idea.

He should make a good salesman, for he can talk well and knows what people want better than they do themselves.

He does not get ruffled when people are difficult to please, and should be given the difficult task to do, especially in handling those who do not know their own minds. He enjoys fun and a good joke.



WM. J. COANE, Manager Philadelphia Branch.

*No. 14.—A good practical Manager and excellent Organizer.*

This gentleman should take up some of the literary work on hand and be able to edit a paper and produce telling advertisements, and put things into shape in a smart busi-

ness way. He has no lack of ideas and can tell what he knows in a direct and forcible way.

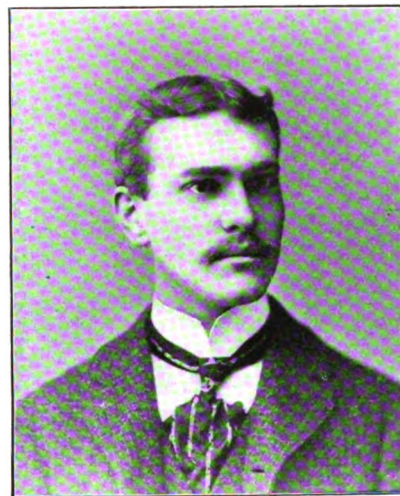
He has an excellent constitution; hence spreads around him a healthy influence and knows how to get people to work for him in an industrious and energetic way. He can set a business ball rolling and it will always collect as it travels

He will never waste his energy nor his time or money, as they are all important items in his regard.

He is a very intuitive man and forms correct opinions concerning others, and has an excellent artistic eye which is able to take in everything before it.

He has a self-contained, independent, manly character, and should be an excellent organizer or superintendent.

He is very systematic, orderly and neat in his work, as well as in his arrangements and plans.



W. B. ALLEN, Western Salesman.

*No. 15.—A tactful, unassuming, artistic Business Man.*

This gentleman appears to have quite an expert mind and should be able to bend his intellect to definite and distinct work. While some men can do a little of everything, this gentleman will be able to pin his attention to the close examination of whatever work he has before him.

He is highly sensitive to criticisms and he works under special pressure even better than where things are running smoothly, and there is plenty of time to elaborate his work.

He is rather reserved; hence will show business tact and will be able to hold the confidence of others in a business way.

His sympathies are easily enlisted; hence will do better for some one else than for himself.

He can be relied upon when he is given responsibility, but will not take it without pressure from some one else.

He will do well in a position where he does not have to talk much, say in an artistic, original line of work.

Wallingford, Conn., Sept. 3, 1903.

Gentlemen:—Your copying pencil ETERNO is by far the best which has been brought to my notice.

HERBERT FOSTER.





A. K. INGRAHAM, Eastern Salesman.

*No. 16.—A Business Man with an inventive, original, expansive Mind.*

In this gentleman we have one who has any quantity of new ideas. He is wonderfully versatile in his plans and has more ideas than he can ever adopt or put to use in a small business; hence he should be where he can elaborate his ideas and make full use of them.

His forehead is broad and the breadth extends through the temples; thus he would make a fine architect, decorator, or inventor.

He should not try to both invent and place his ingenious ideas on the market, for he has not so much business capacity as talent to elaborate and develop, or unfold, his ideas.

He is in his element when he is projecting new work, making suggestions and refining the old methods of work and bringing them up to date.

He should be of value to himself and others through his originality alone, but his plans may sometimes enlarge beyond the boundary line and he may have to curtail them somewhat. This is better than not having enough ideas to work with.



SAMUEL H. DOUGHERTY, Salesman for St. Louis and Southern States.

*No. 17.—A wholesale Business Man.*

Some men are good in wholesaling business and in doing work on large and comprehensive plans. In this gentleman

we find a greater tendency to look at things in a broad way than to get down to details, and as there are positions that have to be filled by wholesale men, or those possessing large and extensive business contracts, this gentleman appears to be the one for such a position.

If this gentleman had a thousand orders for a thousand different articles, he would enjoy the vastness of the range of his work. He does not waste much time in idle thought, but knows what he is about and bends himself to it in a quiet, unassuming way.

He knows how to value stock, and were he engaged in buying in materials he could do so appropriately. He dislikes to have people come in during business hours and take up valuable time by idle, useless talk. He likes to plunge into business and get it off his hands as quickly as possible. He is quite persevering, firm and positive in executing his work.



LEWIS MOORE, Salesman for Philadelphia Branch.

*No. 18.—An exquisite Manager of Details.*

Some people do not mind how much trouble they go to in the performance of their work, provided they see a good result springing out of it. They will even be what others will term over-particular and fussy, but they consider that every detail calls for attention and is worthy of note. Some men may write their manuscripts many times before they allow them to pass from their hands.

Such work is creditable, but only certain minds can attend to such fine points of detail.

In this gentleman we find one who is able to scrutinize and point out every variation from the true or normal outline, and is one who becomes absorbed in seeing everything is exactly right. He will not have any careless workmen around him. In fact, such people become weary of doing things with an eye to perfection.

He will spend money as he goes along, rather than hoard it up for old age, thus he will have the pleasure of living his life in a real and substantial fashion as he goes along.

As an artistic critic he would do well.

New York, Sept. 8, 1903.

Gentlemen:—Yours of the 3rd received and I think your ETERNO is a first-class copying pencil.

JOHN KEEGAN.



JONATHAN BARTLEY, Superintendent Crucible Dept.

*No. 19.—A quiet but energetic Business Man.*

This gentleman appears to have good financiering ability, and, while we should not expect that he would make a good salesman or glib talker, yet he could attend to matters behind the desk in a satisfactory way and would be able to account for expenditures in a comprehensive manner.

He has a good practical intellect and therefore can see the effect of certain investments a long way ahead. He is not a rash speculator and would prove to be a good, reliable stay to anyone who was. He always gets full details concerning any syndicate or trust company who appeal to him for his moneyed interests.

He may be a little too cautious at times and allow his fellowmen to get the start of him.

He is honest, straightforward and reliable in his dealings with others, but is not showy, fashionable, artificial nor inclined to seek notoriety of any kind.



JOSEPH DIXON, Founder of the Dixon Company in 1827.

*No. 20.—An excellent Pioneer. A strong, independent, upright Man.*

Some men make good pioneers, organizers or founders. They have clear-cut ideas and lay excellent foundations. They do not build on the surface, but dig down deep in order to make their work substantial.

This gentleman is a man of the above type. He is like

a century plant. He is watchful, guarded, careful, intuitive, far-sighted and thoroughly inspired to think and act for some good purpose.

His features are all strong and distinctly marked. There is resolution depicted in the nose; firmness and reticence in the mouth; personal control and balance of mind in the chin; keen intelligence in the eyes and hospitality in the lines that pass out from the nose.

He is both kind and firm and knows what he is about.

He should be known for his practical common sense, but he has enough reasoning capacity to lay comprehensive plans and get hold of the principles which underlie all business schemes.

He is as true as steel and will have nothing to do with shoddy of any kind.



C. E. HERRICK, Supt. Cedar Department at Crystal River, Fla.

*No. 21.—A thoughtful, substantial, reliable Man.*

A scientific observer is a man who has an ample development of brow. Such a man is a utilitarian thinker, but he cannot lend himself to elaborate his ideas or work them out in a philosophic way.

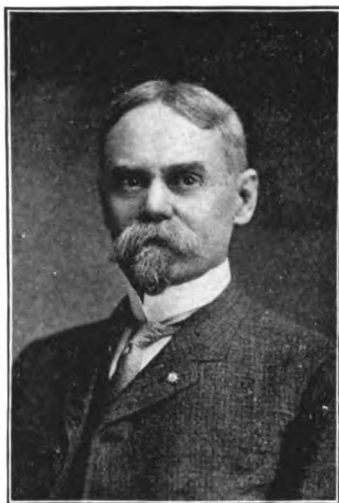
This gentleman has excellent reasoning capacity, and likes to philosophise and fathom intricate problems. His talents would not have been misplaced if he had followed the study of mathematics, astronomy, mental philosophy or statesmancraft. Considering his ability, he is a modest man and can be relied upon to finish his plans of work in a thoroughly creditable and intellectual way.

He has always commanded the respect of his fellows, and as a lad was old for his age and was found to be in the company of older people listening to their conversation long before he was out of school or supposed to understand such matters as they were talking about.

For editorial purposes he could give much useful "copy" without much trouble, while other men would pour over an article and try in vain to present it to their liking.

He would make a better president of a company than a chairman of an executive board; a better judge of the Supreme Court than a sharp-witted barrister.

He possesses judgment, coolness of mind and deliberateness of thought, and likes to straighten everything out in his own mind before he attempts to explain what he is thinking about to others.



EDMOND A. ST. JOHN, Salesman for the Middle Western States.

*No. 22.—A well equipped Officer.*

Some men by inheritance take after both father and mother, and thus are stronger in handling men and in understanding trying positions in life, than those who are purely masculine in type.

This gentleman appears to be a man well equipped to fill any important position requiring executive ability, mental endowment, courtesy in speech and intuitive judgment.

He is capable of sensing the needs of people when they appeal to him for his help, and he has insight to know how far a business transaction will repay the man who puts up the money or invests his capital.

He is a keen, shrewd, far-sighted, intelligent man, possessing excellent memory and fluency of speech which carries all before him.

He is witty but does not carry his humor beyond the point of tolerance; yet, like Abraham Lincoln, he often scores a point and turns a disagreeable episode into a satisfactory arrangement by his perfect understanding of human nature.

He is genial, sympathetic, social and adaptable in his intercourse with men.



ROBERT A. BLACK, Assistant to Mr. Dougherty for St. Louis and the South.

*No. 23.—A conscientious Business Man.*

The photograph of this gentleman indicates that he is a conscientious business man with whom others would like to have dealings, for they know that he will give them satisfaction.

He will not equivocate or turn a round corner when he should have turned a square one in a business transaction. He is not sharp, keen or demonstrative in his work, but he is able to get to his destination about as soon as those who flutter their wings and boast about what they are going to do.

He is more steady and reliable than quick or executive in his habits. He likes time to consider a thing, but he does not waste time when he gets to work. He may have to be understood to be appreciated, for he is not one to blow his own trumpet or to talk in the corridor or lobby what he is going to do. His work generally recommends him, and the second time he does a thing he does it just as well as when he was on his trial work.

If he were a politician he would carry out all the promises he made to his electors. He has a good perceptive intellect, which is balanced by reason.

Parma, Mo., Sept. 6, 1903.

Gentlemen:—I don't believe your Dixon's ETERNO No. 2050 pencil can be beat for any kind of writing or copying.

Yours truly,

WHITE'S DRUG STORE.

Esplan, Pittsburgh, Pa., Sept. 7, 1903.

Gentlemen:—Complying with your request regarding the Dixon ETERNO copying pencil, will say that it is as good as, if not better, than any other copying pencil on the market.

Yours truly,

JAMES McFRANK.

New York, Sept. 7, 1903.

Gentlemen:—The ETERNO is a wonder. Letters written with it copy perfectly. I shall order some of these pencils for use in this office.

Yours truly,

J. C. COOK,  
Advt. Mgr. Mail and Express.

Chicago, Aug. 24, 1903.

Gentlemen:—The sample of your ETERNO pencil reached me this morning. It writes smoothly, holds a point well and combines the good qualities of the ordinary pencil with the additional feature of a good copying lead. I thank you for your courtesy.

Very truly,

RUFUS T. BRADY.

Bloomington, Ill., Aug. 23, 1903.

Gentlemen:—Sample ETERNO received today. I find it to be everything that could be desired in the way of a copying pencil. For my work it excels any I have ever used.

Thanking you for same, I remain,

Yours truly,

G. F. PHARES.



## COMMERCIAL EXAMINATION OF GRAPHITE.

By J. DUNRAVEN YOUNG.

The increasing demand for graphite and the opening up of newly-discovered deposits, make the examination of graphite rock a matter of great importance to the commercial chemist.

The most common method of estimating graphite is by burning off the graphite particles, weighing the residue and obtaining the per cent. of graphite by difference. This method gives accurate results only if the graphite rock is a mixture of pure graphite and quartz or some non-volatile, undecomposable silicate. The results are entirely wrong if the gangue matter contains organic matter, clay, water of combination or carbonates, as all these substances yield a loss on ignition, and consequently the results obtained for graphite will be too high. In a high-grade graphite the error occasioned by the presence of above mentioned substances will, at most, be small and be neglected, but in graphites of medium or low grade, the results thus obtained may be utterly worthless. Yet the method of combustion is the most convenient for the commercial chemist, and with suitable precautions may be made to yield fairly accurate and concordant results. It is the purpose of this article to present a few slight modifications of the combustion method, so as to make it more suitable to the analyst.

The method of combustion, as ordinarily used by chemists, consists in burning a definite quantity of the graphite rock in a weighed crucible until all the carbon appears to be oxidized. The loss in weight occasioned by this burning is deducted from the weight of graphite sample, and the difference is considered as the weight of the graphitic carbon and calculated to per cent. This process of burning is very slow, often extending over many hours, especially in case of high-grade graphites.

If the laboratory has facilities to burn in oxygen gas, the combustion may be accomplished much more rapidly. As many laboratories are not provided with this convenience, the chemist must seek to facilitate the combustion by other means. A very suitable rapid method of burning is as follows:

Mix one-half gram of high-grade graphite (or one gram low-grade graphite) with one gram of finely-pulverized wood charcoal and transfer without loss to a weighed platinum crucible and burn, occasionally stirring the contents of the crucible with a platinum wire. The combustion will be completed in 30 to 60 minutes. The crucible and contents, after being cooled, are weighed. This residue will consist of the non-volatile matter of the graphite, together with the ash of one gram of charcoal.

Next determine the ash in one gram of charcoal by the usual method of burning in a platinum crucible. The weight of the ash of the charcoal is then deducted from the above residue, the difference being the weight of the non-volatile matter present in the weight of graphite taken. If the weight of this residue, thus corrected, is deducted from the weight of graphite taken, the difference, which is the loss on ignition, will represent the weight of graphitic carbon, provided no volatile matter is present. In general, the results thus obtained will not be reliable unless the following correction is applied:

Into a weighed platinum crucible put one gram of the graphite, close the crucible very tightly with cover and set the latter upright on a clay triangle. Next heat the crucible for three to five minutes, giving it the highest temperature attainable with a good Bunsen burner, and allowing the flame to pass around the crucible on all sides. Then cool the crucible in the desiccator and weigh. The loss in weight represents the volatile non-combustible matter in one gram of graphitic rock. This "loss on ignition in closed crucible" must be added to the weight of the non-volatile residue or subtracted from the weight of graphitic carbon as obtained above. The results so obtained are very accurate if the gangue matter consists only of quartz, clay, silicates, carbonates or volatile organic matter. The results are not reliable if sulphurets are present. If such is the case, it will be necessary to select one of the other methods for estimating graphitic carbon. The above rapid method has been used in our laboratory for the past six years, giving, in every instance, complete satisfaction.

It will be apparent to every practical chemist that it is not necessary to determine the per cent. of ash in the charcoal for each determination of graphitic carbon. If the sample of pulverized charcoal, on being received from the supply house, is thoroughly mixed and kept in a tightly stoppered bottle, it will be sufficient to determine the per cent. of ash once, in duplicate. This per cent. can be recorded on the label of the bottle and may be used as a correction number as long as the charcoal lasts.—*Mining World*.

## GRAPHITE IN THE CYLINDER.

FROM "Power."

Editor *Power*:

I see that several of your correspondents have been writing about graphite and how to get it into the cylinder. I managed to do it quite by accident and will tell you how. We have a duplex pump 20 x 10 x 7¾, with an oil sight-feed which we don't use now. I screwed on an old open-top lubricator (with a cock in the connecting pipe) into the cylinder, filled it about half full of graphite and screwed on the top. There is a slight leak of steam at the stop-cock, which seems to keep the graphite in circulation, and so it drops into the steam and in the cylinder. Each morning the cup is empty, except for a little hanging around the side. Last week I had to remake a cylinder-head joint, and, on taking it off, found the cylinder in splendid condition. The pump used to grunt continually, unless we kept the sight-feed going all the time. I now use a tablespoonful of graphite per day and have no trouble.

H. S. DUMBRILL.

## BETTER LINOTYPE WORK.

Mr. Harry A. May, of the Pittsburgh *Herald*, Pittsburgh, Pa., writes:

I have given Dixon's No. 635 Dry and No. 635 Oiled Graphite a thorough test. I consider Dixon's No. 635 Dry Graphite the very best thing obtainable for use on linotype space bands, matrices and matrice channels. I have used Dixon's No. 635 Oiled Graphite both for linotype use and general lubricating purposes, and with most gratifying results.

### CONCERNING THE ESTIMATION OF GRAPHITE.

(A reply by Frederic S. Hyde, Chemist of the Dixon Company, to an article by J. Dunraven Young, entitled "Commercial Examination of Graphite," which also appears in GRAPHITE of this issue.)

In *The Mining World* for July 18, 1903, appears an article on the "Commercial Examination of Graphite."

It is stated that "The most common method of estimating graphite is by burning off the graphite particles, weighing the residue and obtaining the per cent. of graphite by difference," but that "The results are entirely wrong if the gangue matter contains organic matter, clay, water of combination or carbonates, etc."

This statement is qualified considerably by the following sentences: "In a high-grade graphite, the error occasioned by the presence of above-mentioned substances will, at most, be small and can be neglected; but in graphites of medium or low grade, the results thus obtained may be utterly worthless. Yet, the method of combustion is the most common for the commercial chemist, and, with suitable precautions, may be made to yield fairly accurate and concordant results."

The fact is, the intelligent chemist aims to avoid such pitfalls.

In the case of graphite ores containing gangue, it is preferable to first estimate the quantity of flake and fines that can be separated, and then assay the flake for the percentage of graphite it contains.

Carbonates are easily detected and may be removed mechanically or by acid treatment, or, if necessary, they may be determined separately and allowance made.

It does not necessarily follow that all the graphite in an ore can be extracted, in a form suitable for all purposes, so that a direct assay of the ore means little in comparison with the assay of the milled product, except, possibly, as a "tab" on a milling operation.

Some of the richest American ores, so far as *quantity* of graphite is concerned, yield a flake of low grade when compared with that from some of the lower ores.

Again, referring to the method of combustion, as ordinarily used by chemists, we quite agree with the author of the article that the "process of burning is very slow, often extending over many hours, especially in case of high-grade or medium-grade graphites." But, at the same time, we might add: Quite an important factor when the refractory power of a graphite is to be considered. Concerning free and combined moisture and sulphurets, the same precautions observed in the analysis of clay will give concordant results in the case of graphites.

The use of charcoal in admixture with the graphite to shorten the time of combustion, as suggested in the article, may have its advantages, but hardly compensates for the useful data obtained by testing the sample directly before the blast.

We note that the determination of graphite by fusion with caustic potash in a silver crucible is not mentioned, and yet it is a most useful method in the presence of fusible mineral matter, or easily reducible oxides detrimental to platinum crucibles. This method is fully described in *The Mineral Industry*, Vol. IX.

Of course, the fusion method yields purified graphite di-

rectly, but affords little opportunity to determine its refractory power in the natural state, or to study the physical properties of the ash, which passes into the "melt."

The ash bears the same relation to the graphite that cinders or ashes do to coal, and should not be confounded with free sand or other impurities from gangue matter present in unmilled goods, or the mineral matter sometimes incorporated in a manufactured product for definite purposes.

Some varieties of flake give, on combustion, an ash retaining the shape of each original particle—a "skeleton," as it were, around which nature deposited the graphite, and which, according to toughness and elasticity, imparts its characteristics to the flake.

Therefore, the structure of the ash may have an important bearing on the value of the graphite for lubrication, crucibles and facings.

No matter how elaborate the apparatus or simple the method for determining the graphite, it will fail to give the information most desired, unless applied with proper skill and a definite object in view.

By no means does it follow that the richest graphite will make the best lubricant, polish, facing, crucible or pencil. If such were the case, artificial graphite, to-day, would occupy a still more commanding position than it does, although for electrodes, used in the alkali industry, it may stand without a superior.

The lustre, streak, smoothness, conductivity, structure, refractory power, behavior in admixture with other materials, bulk, size of particles, cohesiveness, etc.,—all these determine the uses of the various grades in the arts and industries.

In the works of the Joseph Dixon Crucible Company every precaution is taken to insure uniformity of products to meet the demands of its patrons.

It is not unusual to reject samples submitted for an opinion, after an exhaustive chemical examination, only to receive the ingratitude of the sender, because of nature's omission to place graphite in his ore, or because it happened to be poorer than the poorest "throw-aways" from the mills.

Experience has shown that very few graphites meet all requirements, and that claims made by various parties as to the utility of their products for all purposes should be taken *cum grano salis*.

### APROPOS OF MR. YOUNG'S YOUNG MEN.

"It is in its way an exciting moment for a young man when he receives proof that his seniors, the men of actual achievement and admitted ability, think that there is something in him, that he can be of service to them, that it is in his power if it be in his will, to emerge from the ruck and take a leading place."—*Anthony Hope in Tristram of Blent*.

WHEN Sam. Mayer was in the Dixon office last month, he was asked if he ever heard of that miracle in the Bible where a woman was turned to salt.

"Oh! yes," said Sam, "but I saw a bigger miracle than that today."

"How is that?" they all exclaimed.

"Why," said Sam, "I saw a pretty girl go by the office and Jim Robotom turned to rubber."

## GRAPHITE LUBRICATION FOR LOCOMOTIVES.

BY MR. BRUCK,

Inspector of Railroad Construction, Royal Bavarian Government  
Railroad Service.

From "Glaser's Annals of Industries and Construction Work,"  
Berlin, Germany, February 15, 1903.

*The Graphite used was Dixon's Flake Graphite.*

Practical men have for many years been familiar with the method of adding graphite to the lubricating oil used on locomotives, but for some time this seems to have been largely discontinued. But, as in the case of many of the other details of practical railroading, changing conditions have caused a renewal of the experiments, and with better results than before.

In this particular case, this has been caused by a new variety of graphite, which made its appearance some years ago, and which possesses great advantages over the kinds previously used. It is known as "Flake Graphite" and comes in small, thin flakes. It is softer and a better lubricant than the graphite formerly used, and has an additional advantage of a total absence of earthy impurities.

For some time past, experiments on a large scale have been made on the Bavarian Government Railways with the use of this new flake graphite for the lubrication of those parts of the locomotive which come in contact with steam, and the results of the experiments have been described in the technical papers. The experiments made in the Inspection District Cottbus, which have been in progress for eighteen months under the instructions from the Royal Railroad Managers at Halle, soon showed the practicability of placing entire dependence on graphite lubrication for the exterior parts of the engine and for the journals: First, because these parts require the greater part of the oil and in the second place, these were the best places to try the experiments, as but few changes needed to be made in the lubricating apparatus, while, at the same time, the condition of the lubricated parts could be easily observed.

The principal change was made in the lower removable part of the journal of the locomotive and tender. It was found that the pad was not suitable for the proposed feeding of graphite and a reduced quantity of oil. Experience showed that defective operation of the apparatus caused frequent trouble, which, particularly in the case of the locomotive journals, could not be discovered in time to be remedied.

The pad was therefore removed and the lower part of the journal box filled with good woolen waste, which was soaked thoroughly with a mixture of mineral oil and flake graphite with some tallow. The case was so thoroughly filled, that when placed in position it was compressed and forced against the running surface. The continued feeding of oil, when running, now only came from above through one of the two tubes of the lubricator, while the other tube was used to feed a thin mixture of the graphite and oil.

In the case of the one-piece journals of the new tenders the pad was used in the same manner as the waste in the foregoing case, that is, a strong saturation with oil and a layer of graphite on the top surface of the pad is sufficient. In this last case, graphite is added daily, a few drops of a thin mixture of graphite and oil being poured on the axle.

In the other parts, which are lubricated by means of wicks, graphite can only be applied occasionally, after the removal of the wicks, while the continuous lubrication is done by means of the wicks, which, however, feed the oil in reduced quantity.

Whenever possible, the mixture of graphite and oil was applied with a brush, as in the case of the guides and cross-heads.

In the cups of the driving and piston rods, the graphite mixture can be used by itself, as the small flakes of graphite readily pass through the small tubes. The only care needed is to guard against using too much graphite, as this may clog the tubes.

The quantity of graphite used is very small, in proportion to the oil only about 1/800. The local engineers use 0.1 to 0.2 kg. flake graphite for a service of about 9,000 km.

The results of the experiments showed that after one or two trifling mechanical difficulties were overcome, the use of flake graphite gave such good results that it was adopted on the various locomotives. The results were particularly noticeable in the case of the axles which were fitted with the removable journals. The consumption of oil on these locomotives was reduced one-half, or even less, of the quantity previously used. On a passenger train service, for instance, which showed a consumption of 22 kg. mineral oil for a service of 1,000 locomotive km. (other lubricants, such as rape oil, cylinder oil and tallow, being calculated on the basis of mineral oil), after being fitted for graphite lubrication, showed an average consumption of 10 kg. And a great advantage is the fact that though much less lubricant is used, hot boxes are very much less frequent when graphite is used than when oil is used alone.

The advantage of the flake graphite seems to lie in the fact that it prevents the thin oil from leaving the running surfaces, notwithstanding the great pressure placed upon it by the great weight of the locomotives, because it makes the lubricant thicker, while, at the same time, it feeds readily. In addition to this, the flakes of graphite fill up the small inequalities of the surfaces of the rods and axles and produce much more quickly the condition of the bearings, which have been worn absolutely smooth and true. This observation is borne out by the fact that after graphite has been in use some time, the surface of the axle is very highly polished, though of a darker color than before.

Cottbus, November 1902.

## COLORS AND SPECIFICATIONS.

The Joseph Dixon Crucible Company, Jersey City, N. J., have sent out a new folder, entitled "Colors and Specifications," which they have published for free distribution. Five excellent classes of steel and iron construction are illustrated. The specifications suggest best methods for construction and maintenance painting of steel and iron, based on their experience of forty years as manufacturers of a protective paint and with an intimate knowledge of the paint requirements of civil engineers, architects, painters and owners of steel and iron structures. Accompanying the specifications are the four shades in which the company manufacture Dixon's Silica Graphite Paint.

—St. Louis Lumberman.

### THE SUCCESSFUL ENGINEER.

We are told that an engineer who so cares for all the parts that go to make up that magnificent, modern piece of machinery, the railway locomotive, in such a manner as to insure reliable service with the best possible economy and safety of operation, is entitled to be called a successful engineer.

It often happens that one engineer reaches success more quickly than another, and this is quite as often due to a feeling of confidence that one engineer has, which is lacking in another.

Confidence is grown on the tree of experience. The engineer that secures it never loses his nerve; he is always master of himself and of his engine.

The engineer whose experience has taught him the needs of his engine, and who has profited by that experience, knows that it is not alone in the superior construction of the engine on which he must depend. Every working part of that mighty steed of steel must move with the greatest ease and the least friction, and to do this the lubrication must be far more perfect than good workmanship and oil alone can make it.

Engineers have learned through papers, read at conventions by superintendents of motive power, that fifty-five per cent. of train delays, where oil only is used, are traceable to the engine, and the successful engineer knows, through his own experience, that the introduction of Dixon's Pure Flake Graphite to engine cylinders and the various working parts of his engine means a large reduction of the fifty-five per cent. mentioned.

The experienced engineer also knows that when an engine comes from the shops with new brasses, or with old brasses rebored, there is no danger of a hot pin if he puts some of Dixon's Pure Flake Graphite in his rod cups. The graphite fills the pores of the metal and all the irregularities of the surfaces, making them of marvelous smoothness. The engineer who has intelligently used Dixon's Pure Flake Graphite has gained a confidence in his engine and in himself that insures success.

### HAVE YOU MET HIM?

*Piccolo* in its advice to salesmen says: "Never ignore the poorly dressed man or boy, he may be the one with whom you will have to do business." When you come to the Dixon office to transact important business, keep an eye open for the man who at all seasons of the year is without a coat, and with his sleeves rolled up has the appearance of a sixteen-hours-a-day man and an intimate association with graphite products, but nevertheless always shows immaculate linen. He is the man with whom you will have to do business.

### HOW TO BECOME A MILLIONAIRE IN A MONTH.

It seems easy. Just save a cent to-day, two cents to-morrow, four cents the third day, and continue through the month doubling each day the savings of the preceding day. At the month's end you would be a multi-millionaire. Try it on paper; any other way is impractical, of course, and the way most people get rich is on paper.—*Batten's Wedge*.

## Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, type-writer work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing**.

**Dixon's Plumbago for Powder Glazing**.

**Dixon's Plumbago Foundry Facings**.

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite**.

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Cycle Chain Graphites**, for perfectly lubricating chains and gears of bicycles.

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Anti-Flux Brazing Graphite**, to prevent the spelter from adhering when brazing.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians**.

Special circulars with detailed information sent on request.

# Graphite

ASTOR, LENOX & TILDEN FOUNDATION  
NEW YORK

VOL. V.

NOVEMBER 1903.

No. 12.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

*COPYRIGHTED 1903 BY THE JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.*

## BOOKKEEPING WITH A LEAD PENCIL.

One of the readers of our exchanges cut out the following and omitted the name, so we cannot give credit as usual, except in this way.

The supervision of every store should extend to the books.

The simplest is always the best method of expression. Why use a pen, penholder, ink and erasers, when a pencil with a rubber on the end will supply all demands better, cheaper and with less labor.

Is there any reason why a retail merchant should not keep his books in lead pencil? One of Chicago's largest wholesale houses does.

If pencil is used, then the books used can be of cheaper paper and correspondingly less expensive. Therefore, I think a retail merchant's books should be kept

with a hard lead or indelible pencil.

It is easier, cleaner, takes less time, and makes the correction of errors quicker and easier. It is no safeguard against errors or dishonesty. A man can falsify and steal as easily through ink as through pencil.

Bookkeeping is only memorandum work, anyhow. Make it as simple and easy as possible. Don't waste profits in ink. It is the little leaks that eat up the profits. Unnecessary labor is a leak. Expensive paper in books is wasteful. I believe in cheap paper and pencils, bright boys and girls who can add and subtract, and good common sense business judgment to tell them how to put the figures down so they will add up something to show the movement of the business.

## HOW SALESMEN MAKE PEOPLE BUY.

Successful salesmen should be psychologists, and above all, should never become angry, says *"Expert."*

We read that, according to Dr. Silas S. Neff of Philadelphia, the successful salesman is the one who exercises mental influence on the buyer. In other words, the successful salesman is a psychologist. Dr. Neff says:

"Abstain from all negative influences. Do not think of evil, crime, anger, hate, revenge or worry.

"Let your mind dwell on hope, ambition, love, friendship, sympathy, art and music.

"There are three predominant types of buyers; the intellectual, the emotional and the volitional. The first reasons and thinks it out, the second simply feels it and the third gets there at once and decides.

"If the buyer belongs to the intellectual class he must be shown the advantage of the purchase, he must be convinced by reason.

"If the buyer belongs to the emotional class, then such things which appeal to the eye and emotions catch him.


"All the talking in the world and all the winning smiles in the universe, won't make the volitional buyer purchase a penny's worth more than he wants; his mind is made up and the salesman would employ his time better by devoting his attention to the next customer.

"If the buyer is a person of great wealth and is proud of the fact, then the salesman does not need to mention price, he has simply to fall in with the buyer's idea of independence and talk style, quality and everything, but omit the cost.

"Where the buyer has limited means and is conscientious, the salesman should simply be accommodating and the customer will buy what he needs.

"Where the buyer is undecided, then it is simply the will of the salesman that must decide the matter."

**DID YOU EVER  
HEAR A HORSE LAUGH?**



**IF NOT, LUBRICATE YOUR**

---

**WITH  
DIXON'S  
GRAPHITE AXLE GREASE**  
And You Will.

Does not harden in cold, or run off in hot weather.

**IT NEVER GUMS**  
It forms on all bearing surfaces—especially on iron, steel and wood, an incomparable slippery glaze, which reduces friction, strain and abrasion to a minimum.

"A merciful man is merciful to his beast." Lighten your horses' labors by using Dixon's Graphite Axle Grease. For sale everywhere.

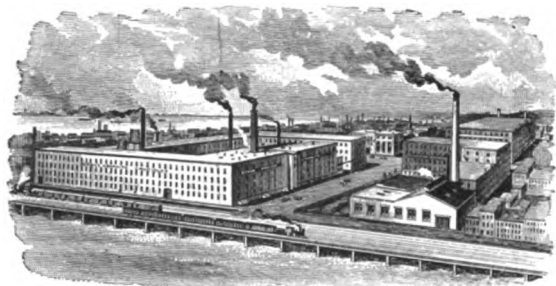
**JOSEPH DIXON CRUCIBLE CO.**  
Jersey City, N. J.



ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

### BRANCHES AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Horgen (Switzerland), Finland, Havana.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., November 1903.

### END OF VOLUME V.

With this issue of GRAPHITE we complete our fifth year and the sixtieth number.

When our first number appeared, December, 1898, we were told that it was interesting, and that probably we would find enough to say about graphite and its uses to enable us to get out, perhaps, half a dozen more issues, and then we would find ourselves at the end of our rope.

During the past five-years several new uses for graphite have developed and the end is not yet.

Furthermore, there is still a good deal of missionary work to be done in explaining the uses of graphite, and why some graphite is useful for a certain purpose, and another is not, even though it is quite as pure.

We shall at all times be glad to receive and answer any communications on the subject of graphite and its uses.

ELSEWHERE in this issue will be found a very interesting article written for *Marine Engineering* by Lieutenant H. C. Dinger, of the United States Navy. The notes are the result of observation and investigation of seagoing experience.

The conclusions of the Lieutenant are in accordance with the observation and experience of another expert who was called in to solve the difficulties of lubrication of engines and machinery of a coast line steamship company.

If this is your greatest earning time, make it also your greatest saving time.

### DIXON'S LUMBER PENCILS.

The purchasing agent of one of the prominent lumber companies in the south advises us that he considers Dixon's lumber pencils not only the best, but the most economical, "although we can buy longer and larger ones for two-thirds of the price we pay you."

### GRAPHITE CAR RHEOSTATS.

The Magneto-Electric Company, Amsterdam, New York, are making a new graphite street car resistance box which, it is claimed, is absolutely fire-proof, being composed of aluminum, and graphite tubes made by the Dixon Company.

These resistances are built in standard units, and can therefore be easily made up to meet the requirements of any street-car work. The principal points of superiority, to which they call attention, are as follows:

"FIRST—Extreme lightness. These rheostats weigh about one-third, as against any other resistances dissipating an equal amount of energy.

SECOND—Perfect ventilation. Owing to materials used, it is not necessary to entirely inclose our rheostats, as moisture in no way affects same.

THIRD—Constant resistance under all conditions of current consumption. Owing to the alloy of graphite which we use, the ohmic resistance does not vary with any current consumption, that is within the safety limit of the rheostat."

### INCREASING POPULARITY OF GRAPHITE PRODUCTS.

The Dixon Graphite Pipe Joint Compound, made by the Joseph Dixon Crucible Co., Jersey City, N. J., is rapidly pushing to the front. Large orders are constantly coming in, while the trade in smaller packages which is handled by the dealers, is also increasing. One company recently ordered 600 pounds in small packages for use in its various plants. This compound is used to good advantage on all pipe joints, gasket surfaces, bolts, water tube caps, and in many other places on steamships, and the Joseph Dixon Crucible Co., Jersey City, N. J., will be glad to send prices and samples to anyone who will drop them a postal.

—*The Nautical Gazette.*

### THEN, NOW AND AGAIN.

Centuries ago, the Island of Ormuz, in the Straits of Ormuz, at the entrance of the Persian Gulf, was the synonym of royal splendor. It is thus referred to by Milton in "Paradise Lost:"

High on a throne of royal state which far  
Outshone the wealth of Ormuz and of Ind,  
Satan exalted sat.

To-day it is occupied by a handful of Arab fishermen. Russia now wishes to get a foothold there for access to the ocean. And of this Lord Lansdowne said, the other day, that even if it meant war, Great Britain would not permit it. Possibly royal splendor may come a second time.

—JOHN A. WALKER.

## LEAD HEATING IN A BLACKLEAD CRUCIBLE.



We have for many years sold crucibles to manufacturers of files for use in the process of tempering, and our attention is called to the subject of lead heating by an article "Sparks from the Anvil," in Mr. E. R. Markham's book, *"The American Steel Worker,"* from which we quote the following:

Small articles, if of an even size or thickness throughout, may be put into the lead when they are cold and left until red-hot, although they should be turned over occasionally. But pieces, such as shank mills and similar articles of irregular contour, having large and small parts in connection with each other, should be heated nearly to a red before putting into the lead, as the sudden expansion of the large thin parts would tear them from the more solid portions that could not heat and expand so quickly.

The purpose of putting such pieces into the lead is for the uniform heat that can be finally obtained on the unequal sizes and thicknesses, making them much less liable to crack when dipped in the bath. If an irregular shaped piece were plunged suddenly into the red-hot lead, and thereby cracked, it probably would not be noticed until it was hardened, and the natural inference would be that it had cracked in the cooling bath; but a careful examination of the fracture would show the walls to be black, proving it to have been subject to heat after it was cracked. If it were sound until dipped in the bath, the walls would have a brighter appearance, although it might be somewhat stained by the contents of the bath, yet they would not be black.

The following question may suggest itself: If the piece of work is to be partly heated in another fire, why not heat to the hardening heat? The reason for this is, that a much more uniform heat can be obtained in the lead crucible than in an ordinary open fire. When it is necessary to harden a portion of the piece, leaving the balance soft, it need only be dipped in the lead the required distance, moving it up and down to prevent a fire-crack. It is likely to crack at the point where the heat leaves off, just as a piece of red hot steel will crack if dipped into water in such a way that some of the red is out of the bath and the piece held in that position. It then cracks at the point where the contraction ceases, while in the first case it cracks where the expansion ceases.

If impossible to do the first heating in an open fire, or if it is considered advisable to heat in red-hot lead altogether, the piece may be immersed in the lead, left there for a moment and withdrawn. It may then be immersed again, leaving a little longer than the first time and withdraw it again, repeating the operation until the steel is heated to a point where the intense heat will not cause it to crack from the sudden change of temperature.

To prevent dross from forming on the lead, keep the surface covered with broken charcoal. This not only has a tendency to prevent dross forming, but the charcoal, catching fire and burning, keeps the surface of the lead at a more uniform heat than if not used. But despite all these precautions, more or less dross will form in the surface

of the lead. This should be skimmed off occasionally, in order that it may not stick to the work.

When no longer using the crucible, the lead should be emptied out, as, if left in the crucible until it cools and solidifies, the crucible will probably crack when the lead is heated again. It may be removed by means of a ladle and emptied into small moulds. When the crucible is nearly empty, it may be lifted from the fire and the balance of the lead poured out. To get good results when hardening, the lead should be stirred up from the bottom occasionally in order to equalize the heat, as it will be hotter at the bottom than it will be toward the top.

When heating pieces with fine projections or teeth, it is well to use a stiff bristle brush to remove any lead that may stick in the bottom between such projections. This should be done before dipping into the bath, to prevent soft spots. Steel will not harden where lead adheres to it, as the liquid in the bath cannot then come in contact with the steel.

There is no one method of heating steel which is so generally used that is a source of more annoyance than the one under consideration, because attention is not paid to a few simple points. But if a chemically pure lead is used in the crucible, the contents of the crucible is stirred occasionally, and as low heat as possible is maintained, excellent results will follow.

A serious mistake, which is made many times, is to heat the lead too hot, leaving the piece of work in just long enough to bring the surface to the desired heat, then removing and quenching. The objection to this method is, the heat is not uniform throughout the piece, consequently poor results follow. If the article is left in the lead long enough to become uniformly heated throughout, it will become too hot. If the lead becomes too hot, it is best to plunge a large piece of iron or scrap steel into it, allowing it to absorb the extra heat, thus reducing it to the proper temperature. It is then safe to go ahead with the heating, and not until then. Do not neglect this precaution.

It will readily be seen that the lead should be of about the same temperature as the steel should be heated, and the articles left in it long enough to become uniformly heated throughout.

The hardener should bear in mind that the amount of heat given steel affects the structure rather than the method of applying the heat.

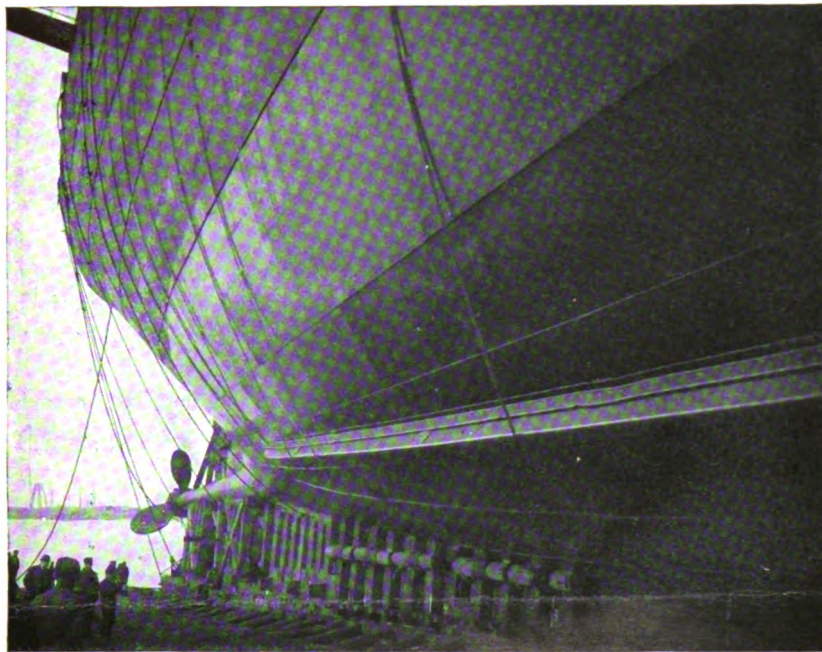
## A GOOD WORKING CODE.

A good working moral code is this: Do that which you are willing that all persons and each person, alive or dead, should know; for you are watched every moment as closely when you think you are alone as at any time. Some one is always near. Get into the dark alone, or into the heart of the woods alone, and you will be sure of it; you will expect to be touched or spoken to. If no one else is there, the other self is. You cannot deceive him. Be careful that you have nothing to conceal, for concealment is not possible. The next person you meet will discover your secret, and you will know that he knows it. Mind reading is commoner than you think.—HUGH O. PENTECOST.

### THE STEAMSHIP MINNESOTA.

The steamship Minnesota, built by the Eastern Ship-building Company of New London, Conn., will run between Seattle and Japanese and Chinese ports. The Minnesota was constructed for the Great Northern Steamship Company and is the largest American built vessel afloat, no other vessels comparing with her in size by several thousand tons.

While the Fuller (or Flatiron) building in New York is 286 feet high and the Washington Monument at the National Capital 555 feet, the length of the Minnesota's hull



The Bracing is Carried Out to the Screw.

is 630 feet. This hull is protected with a priming coat of Dixon's Silica-Graphite Paint, natural color.

The gross tonnage of the Minnesota is 21,000 tons and official dimensions are: length, 630 feet; beam, 73 feet 6 inches; depth to upper deck, 56 feet; keel to captain's bridge, 88 feet; keel to top of mast, 177 feet. The vessel will accommodate 172 first cabin passengers, 140 in the second cabin, 68 third cabin passengers, 2424 troops or steerage, and a crew of 250.

### LINOTYPE GRAPHITE.

A representative of one of the leading papers in Worcester, Mass., met a Dixon pencil man in that city and said to him, "Is this the same firm that makes Linotype Graphite?" The Dixon man said, "Yes," and the newspaper man said, "Do you know that that Linotype Graphite that your company makes is worth its weight in gold? I don't see how anyone can run a linotype machine without it." The Dixon man thanked him very kindly for his unsolicited testimonial, and any newspaper man who does not use Linotype Graphite, who reads this, will do well to try a sample of Dixon's Linotype Graphite.

### A PENCIL FOR MANIFOLD WORK.

The proper pencil to use for manifold work is Dixon's round shape, 3½, "American Graphite" pencil.

This is the "just right" pencil for all work of this kind.

### "POTLEADING" THE MOTOR.

All yachtsmen know of the marvelously smooth surface of a yacht when "potlead- ing." The practice of "potlead- ing" consists in rubbing the bottom of a yacht with Dixon's finely pulverized graphite, whether the bottom of the yacht is metal or wood, and a degree of slipperiness is reached otherwise unobtainable.

A well known New York City doctor, in writing us from Paris, suggests that the surfaces of the cylinder and piston in an automobile can be "lead- ed" in the same fashion. He recalls the "leading" of rifles, a highly successful pro-

cedure in use for over fifty years, which is positively known to greatly add to the life and efficiency of the barrel by its remarkable effect in reducing the friction and heat produced by the passage of a tightly-fitting bullet along the grooves of the bore.

The doctor suggests that as the cylinder of the average automobile motor is almost invariably of cast iron, bored out inside to the required diameter and then polished, that if a material like Dixon's finely pulverized graphite is thoroughly rubbed in so as to fill up the microscopical inequalities, a bearing and wearing surface will be obtained which will be of marvelous smoothness and endurance—a suggestion well worth the attention of automobile manufacturers and users. In the doctor's experience he finds that on long hills the motor did not have the same tendency to overheat, and furthermore that it was certainly easier to start the motor after it had been standing for some time if the motor

and piston had been treated as above stated.

### WHY THEY MARRIED.

"Harold, what first made you think of marrying me?"

"Well, it will do no harm to tell you now. I saw you sharpen a lead pencil once. You did it neatly and without soiling your fingers, and I said to myself that a girl who could do that would make a good wife. Tell me now when you first thought of me as a possible husband?"

"Well, it can't do any harm to tell you now. I saw you were watching me when I sharpened that pencil. I said to myself, 'Maybe that's his test of a girl.' So I took unusual pains with the job."—*Chicago Tribune*.

### MAKING PISTOL DUELS POPULAR.

The *New York Herald* in its Paris dispatch says the pistol-shooting world has been stirred by an invention consisting of bullets made of a compound of wax and tallow with black lead, which will allow sham duels to take place in the same form as fencing bouts. The bullets are sufficiently hard to permit good aim, and soft enough to be harmless, and the graphite plainly indicates the point of contact. The practice is said to be good for would-be duellists, as it will teach them to show only the right side of the body.



ST. LOUIS, Mo.—The Hotel Jefferson, now in course of erection at Twelfth and Locust streets, will, when completed, represent an investment of over \$1,000,000. It is being built by a stock company formed by the Mercantile Trust Co. Barnett, Haynes & Barnett are the architects and the Westlake Construction Company the general contractors. The building is to be ready by Feb. 1st, the contractors employing the five hundred artisans eleven hours a day in order to finish the structure in that time. The Jefferson will be a handsome, imposing structure, and will possess every luxury and comfort. The famous Silica-Graphite Paint of the Dixon Crucible Company, Jersey City, N. J., is being exclusively used for the protection of the steel work in the new Jefferson Hotel.

—Hotel Register.

#### GRAPHITE PREVENTS SPONTANEOUS IGNITION.

The *Engineering and Mining Journal* says the spontaneous ignition of high explosives is supposed to be caused occasionally by a static charge of electricity on the grains, thus causing a spark which detonates the powder; by coating the grains with graphite the formation of this static charge is prevented.

#### A BRITISH COUSIN APPRECIATES "GRAPHITE."

The following letter comes to us from Cardiff, South Wales:—

"I have to acknowledge receipt of several copies of your valued little paper, "GRAPHITE," which has been interesting reading to myself. I shall be pleased to receive one of your special circulars giving information about your varied manufactures.

"I am not aware of your South Wales or Cardiff representatives, and shall be pleased to know whether you have such representatives in this district.

"Please continue to forward me the "GRAPHITE" every month, as I find it a bright and jolly journal.

"Wishing you every success and prosperity, I am,

"Yours faithfully,

"A. WOODWARD,

"Engineer and Surveyor."

#### COLLEGE GRADUATES AND BUSINESS MEN.

Horace Greeley once said "that of all raw-horned cattle, deliver him from a college graduate."

Time, of course, has modified this opinion, but it is still very pronounced that a college training is not especially useful for a business career. Andrew Carnegie and Charles M. Schwab have both expressed themselves positively to this intent.

In a recent number of *Science* a detailed account is given of the bestowal of college degrees for the summer of 1903. They cite the name of the college, the name of the graduate and the thesis on which his degree was won. We quote below some of the subjects of the thesis:

"Fertilization and Attendant Phenomena in *Asclepias* and *Acerates*."

"The Development of the Hybrids Between *Fundulus heterocletus* and *Menidia notata* with Especial Reference to the Behavior of the Maternal and Paternal Chromatin."

"Binary Families in a Triply Connected Region, with Especial Reference to Hypergeometric Families."

"Metabolism and the Reaction of Division in Protozoa."

"Derivatives of Tetrabromorthobenzoquinone."

"The Constitution of Oxyacids from the Thermochemical Standpoint."

"The Influence of Varying Strength Solutions of Formaldehyde on Some of the Enzymes of Animal Origin."

"Contributions to the Natural History of the Isopoda."

"A Study of Some Derivative of Meta-Diazo-Benzene Sulphonic Acid, and the Action of certain Alcohols on Asym-Meta-Diazo-Xylene-Sulphonic Acid."

"On the Embryogeny of *Ginkgo biloba*."

"The Dehiscence of Anthers by Apical Pores."

"The Morphogenesis of *Platystrophia*; A Study of the Evolution of a Paleozoic Brachiopod."

After this need anything more be said as to why the college graduate and the business man do not pull well together?

Both parties are doubtless useful in their respective spheres, but for the Dixon Co. we don't care to have on our staff a man who chooses for his graduating thesis the topic The Embryogeny of *Ginkgo biloba*.

—J. A. WALKER.

NATURAL Gas and oil are hydrocarbons which are supposed to have resulted from the decomposition of coal beds in the earth. All hydrocarbons ignite comparatively readily, but fixed carbons exist sometimes in forms which burn only at comparatively high temperatures. The diamond is a form of pure carbon which requires a very high temperature for its ignition. Graphite is another carbon which is so difficult to consume that crucibles are made of it. Retort carbon obtained in the process of making illuminating gas is used for making carbons for arc lamps, where it is slowly consumed at the high temperature of the electric arc, but the fireman who tries to burn a few of these carbons in his furnace will find the sticks of carbon among the ash practically unchanged, the temperature of the furnace having been entirely insufficient to dispose of them.

—The National Engineer.



**HE COOLY WON.**

A lily tall within a garden grew—  
 Her graceful form, her beauties rare  
 Attracted suitors far from few—  
 Alas! their conquests ended in despair;  
 Yes, all of them were jilted.

Then came a suitor gay who seldom lost,  
 A knave garbed in a costume white,  
 Who smiling cried "I am Jack Frost,"  
 And coolly in a whisper soft and light,  
 Said "Wilt thou?" and she wilted.

H. A. N.

**INTERNAL LUBRICATION OF MARINE MACHINERY.**

Under the above heading *Marine Engineering* for October has a very interesting article by H. C. Dinger, Lieutenant U. S. N. The following is what he has to say concerning graphite:

Flake graphite has the peculiar properties of not being affected, either chemically or physically, by any temperature encountered in a cylinder. It is not easily carried away from the wearing surfaces, can stand any pressure, and requires only an infinitesimal clearance space between surfaces. It has a high lubricating value and hardens and improves the wearing surfaces by filling up all the minute cavities and irregularities in the surfaces, giving, in a short time, a beautiful, hard-polished surface which requires relatively little lubricant.

Graphite may be applied in the following manner: Whenever cylinders or valves are overhauled, mix graphite with vaseline before applying to the surfaces, which insures a general distribution. On starting up, introduce graphite through an oil cup or indicator pipe. This can be done in a dry state, using an oil syringe, or the graphite can be mixed with water and put in just like oil. Adding it to cylinder oils adds to the lubricating value; but if best results, viewed from the standpoint of boilers and condenser as well as engines, are to be obtained, no oil should be introduced into any steam cylinder on board ship. While running, graphite can be added in the same way; but very little is needed, since it quickly distributes itself over the surfaces and, not like oil, it remains there. Whenever there are indications of the cylinder walls "squealing," a little graphite should be added. Some cylinders lubricated in this manner, that have not had a drop of oil introduced for years except that which might have come from swabbing rods, on being opened are found perfectly smooth and as bright as mirrors. The surfaces have a very fine coating of graphite, which keeps them from being dry and prevents abrasion.

The same results are obtained with valves and their seats—the surface is made smooth and hard, scores are filled up, and a tight and easily worked valve is the result.

In order that the piston rod may work with little friction in its stuffing box, it must be well lubricated. Most patent metallic packings have an oiling arrangement, but this should be supplemented by swabbing the rods. The addition of a little graphite to the stuffing-box cylinder oil will greatly improve its lubricating value and also serve to

develop a hard and smooth surface, which is so essential to steam-tight working.

The packing that allows for side movement will keep the rod from wearing and preserve a tight joint much better than those which do not allow such play. Small rods, such as valve rods and rods of auxiliary engines, which in many cases have no separate oiling device, should be swabbed to prevent cutting, or the wearing of the rod to a flat or taper, as well as to reduce friction. The primary feature of keeping a stuffing box tight is to keep a true cylindrical rod, and the peculiar properties of graphite produce a hard and smooth surface.

The small and often delicate secondary valves of steam-pump valve gear are made to fit quite tight, and often they become hot and dry and consequently stick. If oil is used in these it gums on the surface and this causes the valve to stick. Slight rusting also causes cutting, which interferes with proper running. The best treatment for these parts is: (1) Frequent overhauling, wiping off all parts with kerosene to clean, remove, and prevent rust, and supplying graphite to protect and develop the wearing surfaces. (2) Adding a small amount of kerosene, with graphite added, occasionally or when valve does not work properly. Kerosene serves to cut out and prevent rust; it has also no bad effect on the heating surface of the boiler.

It is often stated that pumps will not run without oil, but it is a fact that pumps using oil do not run as well as other pumps in which nothing but a little kerosene and graphite has been used for a long period.

**WATER END OF PUMPS.**

The lubrication of the water cylinders of pumps is frequently entirely overlooked. A great many pumps receive their lubrication naturally, as in the case of air and feed pumps from the oil in feed water, bilge pump from the oil contained in the bilge. But those pumps working on clean salt water—sanitary, distiller, and auxiliary condenser circulating pumps—do not have these sources of lubrication. Salt will deposit itself in some degree and is at once a cutting agent to plungers and pump cylinders.

Such pumps can be lubricated by placing a little grease mixed with graphite on top of the glands. This at once lubricates the rod and some of the lubricating material will find its way to the surface of cylinder, thus reducing friction and wear. The abnormal wear of plunger rods working in clean salt water may have often been observed.

These notes are the result of observation and investigation of seagoing experience, and as such view the matter from a practical standpoint. There is no doubt but that if the question of internal lubrication were well considered and investigated by those operating marine machinery, great reductions in overhauling, wear and tear, and anxieties in attendance would result.

**GRAPHITE LUBRICANTS FOR THE AUTO.**

A doctor writes us: Samples of Dixon's Graphite Lubricants were received and used on my Oldsmobile with excellent results. The lubrication of the cylinder, as well as other parts of motor being much better with the graphite placed in the two kinds of oil than with the oil alone. I am also able to obtain a higher compression in the cylinder.



## DIXON'S SILICA-GRAPHITE PAINT OF WORLD-WIDE REPUTE.

To illustrate the world-wide reputation of Dixon's Silica-Graphite Paint, the mail one morning brought paint inquiries from:

M. FELIX FREEDER, Civil Engineer,  
104 Moyka Street, St. Petersburg, Russia.  
E. J. MOOKLAR, Pago Pago, Tuluila, Samoa.  
G. S. WALSH, Resident Engineer,  
Salvador Ry. Co., San Salvador, Central America.  
WM. PAGAN, Chief Engineer,  
Queensland Railways, Brisbane, Queensland, Aust.  
H. L. WIGMORE, First Lieutenant, Corps of Engineers,  
Tinacaun, Batan Island, Philippine Islands.  
GUSTAV HALBERSTADT, Copenhagen, Denmark.

At home and abroad Dixon's colors stand pre-eminently the best for protection of exposed steel work. This is the season to bring the good qualities of the paint to the attention of your customers, and if we can be of any service in following up your interviews with letters, we shall be glad to give prompt attention to your list of names.

### BOGUS FLAKE GRAPHITE.

We lately received a sample of "Flake Graphite" sold by a would-be competitor, and on sending it to our laboratory for analysis, we were both surprised and amused at the report of our chemist. The report showed that there are tricks in the graphite business quite as unique as in some other lines. The analysis was as follows:

Moisture, . . . . .	1.39%
Graphite, . . . . .	20.51%
Residue, . . . . .	78.10%
	<hr/> 100.00%

Being curious to know what the residue of 78% was, we made further tests and discovered therein 75% of pure mica flake. The mixture therefore was simply one of 75% of flake mica rubbed up with amorphous graphite, the little mica flakes receiving a polish of graphite which, to the unaided eye, appeared as regular flake graphite.

### DIXON'S GRAPHITE WATERPROOF GREASE

For Lubricating Rawhide Pinions.

It is usually understood by those familiar with rawhide pinions that anything in the form of grease is detrimental to the rawhide. This has been our own idea, and therefore as a lubricant we have usually recommended Dixon's finely-pulverized dry graphite No. 635, and it has been found very satisfactory.

It seems, however, that Dixon's Waterproof Graphite Grease has been a great favorite with the United Traction Company at Albany, N. Y. Their Master Mechanic is steadily using it on rawhide pinions and finds that it is not injurious to the rawhide, but on the contrary is indispensable. The Master Mechanic of the Utica and Mohawk Valley Ry., Utica, N. Y., made a similar report, and when the steep grades at Albany and Cohoes are borne in mind, it is evident that Dixon's Graphite Waterproof Grease must be useful.

## DIXON'S INDEX FOR PENCIL USERS.

The Joseph Dixon Crucible Company, Jersey City, N. J., have issued the "Dixon's Index for Pencil Users." Dixon's pencils need no good words. The company have special lines for counting departments, for transportation departments, for draftsmen. Their "Eterno," No. 2050, should be on every desk. Checking and shipping clerks, in their hurried responsibilities, find safety in the strong, vivid marks of Dixon's "Four Hundred," Dixon's "Paragon," Dixon's "American Graphite," Dixon's "Carteret," Dixon's "Operator," and Dixon's "Ultimatum"—the first two named pencils having a hexagon shape, being a trifle more convenient. Dixon's colored crayons have been a boon to this class of workers. They are made by perfected machinery, and have a vividness and toughness that have been generously appreciated. The most popular are: Dixon's "Best," encased in cedar, beautifully finished, thirteen tints in round, and three tints in hexagon shapes; and Dixon's Solid Crayons.—*International Railway Journal*.

### DIXON'S FLAKE GRAPHITE

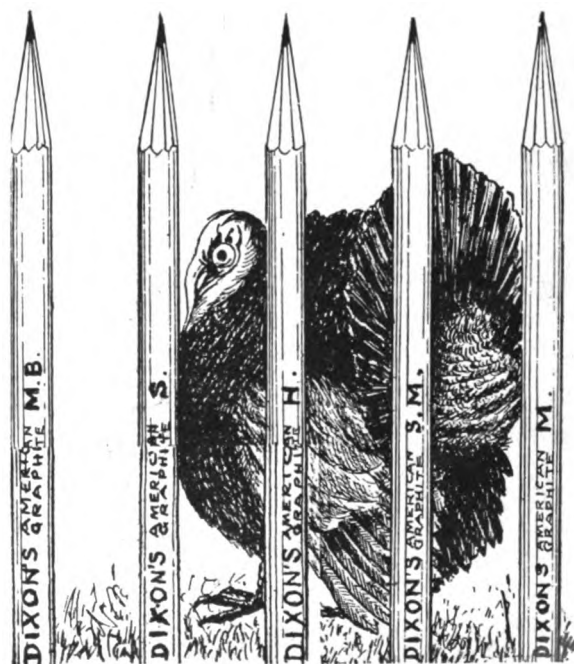
Prolongs The Life of Manhole Gaskets.

The mechanical engineer of one of the largest electric street railway power plants in the world, talks entertainingly and enthusiastically of the economic advantages of Dixon's Flake Graphite and oil for coating the 500 manhole gaskets of 80 boilers embraced in his plant.

The life of the gaskets without the Dixon Graphite coating is about three months, whereas their annual order for new gaskets is but for 100. If it were not for Dixon's Graphite coating, about 2,000 new gaskets would be used yearly.

### DIXON'S GRAPHITE MOTOR BRUSHES.

A customer in reordering graphite brushes, adds: We find Dixon's Graphite Brushes give better satisfaction than any others.



NOV. 26—THE DAY WE EAT 'IM.

### DIXON'S SILICA-GRAPHITE PAINT

**Causes a surprise in Cuba.** The Contractor finds that all the claims made for the Paint are "absolutely true," and that the Paint is "the easiest to handle and covers more surface than any ever before used."

HAVANA, Oct. 10, 1903.

Messrs. Blasco & Co., Obispo, 29.

GENTLEMEN:—

As it was through the efforts of your firm that Dixon's Silica-Graphite Paint was used for painting the "Machina de San Fernando" of this city, I take pleasure in giving you the following information:

In all work about to be executed, I was given much free information, valuable and otherwise, as to the quantity and quality of paint that I should use. Some going so far as to say that it would take at least eight barrels of paint (400 gal.), to give the "Machina" the four coats of paint as specified in the contract. Others, among them being men who claim to be painters, told me that it was impossible to give the "Machina" more than one coat of paint per barrel (50 gal.)

Taking for my calculation one-half of what the manufacturers claim, I told a reporter for the "*Havana Post*" that 94 gallons would be all that was necessary for the four coats required. However, after looking over the literature of the makers of Dixon's graphite paint, I determined to give a more liberal meaning to the manufacturers' statement that "one gallon of paint will cover 800 square feet" and ordered my paint,—Dixon's graphite, natural color, the kind finally agreed upon for painting the "Machina."

By my own experience in painting the "Machina" I feel convinced that every claim the manufacturers put upon their paint is absolutely true. The painter whom I employed in painting the "Machina" told me that the paint was the easiest to handle and covered more surface than any they had ever before used.

Aside from their own statement, their work proved it, as three men working together were able to lower their scaffold the 150 feet (the height of the "Machina"), and paint two legs per day, a surface area of 2460 square feet.

The exact number of gallons that it took to paint the "Machina" four liberal coats is surprisingly small, but that it has been done is evidence too conclusive to doubt. The paint was certainly a happy surprise to me, and to anyone contemplating the use of paint they will find the same.

It is certainly the best, the easiest to handle, the cheapest, and the only true graphite paint on the market.

Very respectfully,

M. T. ROWE.

SOMETIMES it is desirable to write with an indelible pencil. Dixon's "Eterno" No. 2050 is one of the best of this class of pencils. Like other products of the Joseph Dixon Crucible Co., Jersey City, N. J., this pencil is a standard article and cannot be excelled for copying and general purposes. It is a good deal to say, but I believe it to be the best and surest writing pencil I ever used. It runs over the paper as though it was greased, and gives a clean copy.—*Fibre and Fabric*.

### Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, typewriter work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing.**

**Dixon's Plumbago for Powder Glazing.**

**Dixon's Plumbago Foundry Facings.**

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite.**

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Cycle Chain Graphites**, for perfectly lubricating chains and gears of bicycles.

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Anti-Flux Brazing Graphite**, to prevent the spelter from adhering when brazing.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

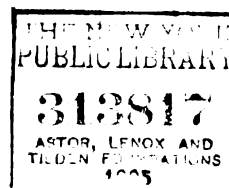
**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians.**

Special circulars with detailed information sent on request.

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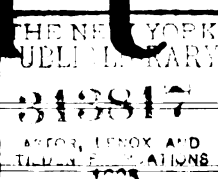
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# Graphite



VOL. VI.

DECEMBER 1903.

No. 1.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

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## AN UP-HILL TASK.

In December, 1898, we began the publication of GRAPHITE, issued, as we said, in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of graphite and their respective uses.

We have labored reasonably hard to make people understand that any one particular form of graphite is not recommended, and should not be used for all purposes for which graphite is applicable.

Yet we find dealers in graphite recommended one particular brand for various uses, including lubricating and painting.

Graphite suitable for lubricating should be the purest graphite obtainable and preferably of flake formation, while for painting purposes the graphite

should carry an inert material, such as silica, in order that the paint may be durable and successfully withstand exposure and wear.

Pure gold is used for certain purposes, but if it is to withstand wear, as in a watch chain, it carries an alloy sometimes as high as fifty per cent. It is the same with graphite.

Go into a pattern shop, and you will notice that sometimes the pattern maker selects pine, again he selects walnut, or mahogany, or cherry. He does not make his selection in a haphazard fashion, but in accordance with his work and certain well-known qualities of the different woods.

The same care in selection will well repay the user of graphite. Unfortunately, however, the nature and qualities of graphite are not generally understood, and until they are the only safe way is to buy the Dixon products.

Such a statement, in any other line of goods, would be egotistical, but in graphite productions the Dixon Company stands alone. The Dixon Company has been the creator of the graphite industry, and has the keenest pride in protecting it and in properly promoting it.

Don't forget to try one of Dixon's "Eterno" Pencils. It is one of the surprises of the day. If your stationer does not keep them yet send ten cents for a sample.

## ACROSTIC FROM "BRICK."

Whether we are to credit editor Royse or Bro. Kenfield, the business manager, we do not know, but we find the following in *Brick*:

The Joseph Dixon Crucible Co., of Jersey City, N. J., is wide awake night and day to the good points of its varied products. Much of the extraordinary success of this company is due to the first-class salesmen employed by it. All of different types, they are unanimous in singing loud praises of the lines they handle. One of them recently approached a prospective customer with Dixon's Graphite Grease, and was informed that the man had never heard of it. To which the Dixon bard made reply:

D—id not hear of Dixon's grease? Well,

I—am amazed. You stand alone.

X—cept a man in exile is or h—,

O—ver all the world, I guess, it's known,

N—ear by and far, 'mong those that toil,

That Dixon's saves in horse power and in oil.

There are seven degrees of hardness in Dixon's Graphite Cup Greases. The softest are for use on light high-speed machinery; the harder grades for heavier work. Write and get literature concerning the Dixon brands, and when you do, mention *Brick*.

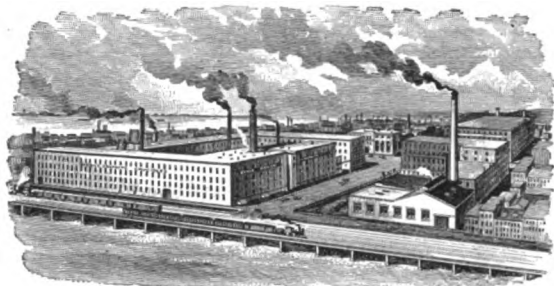
## NEW ELECTRIC FURNACE.

M. Girod, a distinguished electro-metallurgical engineer at Annecy, France, has established a new electric furnace for which great industrial service is predicted. It is briefly described by *La Metallurgie*. It consists of a crucible of graphite or refractory earth, heated on the outside by means of the resistance offered to an electric current by an envelope of graphite. This furnace is mounted on a horizontal shaft about which, like a Bessemer converter, it may be oscillated and tipped over, even during passage of the current. The normal voltage is 20 to 25 volts, but if need be it may be raised to 70 or 80 volts. The furnace is said to be simple, economical and of continuous operation, which avoids damage to the crucible. One man can supervise and conduct the casting with three or four of these furnaces. The temperature can be regulated at will, may be kept at less than 500 degrees Celsius or raised to 3,500 degrees or higher. Thus may be cast pure vanadium and 85 per cent. ferro-tungsten. Finally this furnace may be used for reheating ingots and bars for the forge. It is placed vertical for the ingots and horizontal for long bars.

—*American Machinist.*

ESTABLISHED 1827.

INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J., U. S. A.

### BRANCHES AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Horgen (Switzerland), Finland, Havana.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., December 1903.

### DIXON'S AMERICAN GRAPHITE PENCILS.

Wherever one goes—no matter what his lot in life may be—he finds the pencil, and most frequently it is an American Graphite pencil. The grave and gay, the lively, the severe, all feel the need of the deft implement of thought—the pencil. The school boy, with his shining morning face, and the jurist on his seat of judgment—the poet and philosopher—grocer's clerks and coy young maiden—all, all cherish a good pencil as among the best of their possessions. And such are the Dixon pencils, made by the Joseph Dixon Crucible Company, Jersey City, N. J. These pencils are made in seemingly endless variety—lumber pencils, pencils for artists, advertisement writers, architects, artists, bank clerks, bank tellers, book-keepers, builders, car inspectors, carpenters, checking clerks, claim agents, clergymen, clerks, cloth merchants, conductors, designers, draftsmen, editors, engineers, entry clerks, express employes, freight service, hotels, housekeepers, insurance agents, lawyers, leather workers, lumbermen, mechanics, merchants, metal workers, newspaper writers, office workers, physicians, pressmen, produce dealers, railroad companies, railroad agents, reporters, restaurants, salesmen, shipping clerks, station agents, steamships, stenographers, students, supervisors, tailors, teachers, telegraphers, telegraph editors, trainmen and typewriters.

Pencils for the millions—pencils without an equal—can be obtained in all colors and all degrees of hardness or softness from this celebrated concern, the Joseph Dixon Crucible Company.—*St. Louis Lumberman.*

### AN EDITOR'S MAINSTAY.

By the Bald-Headed Board of "The Journalist" of New York, a paper devoted to newspapers, authors, artists and publishers.

If a pencil is needed for writing  
Your manuscript quickly and well,  
Take our word, that for good inditing  
The DIXON S. M. does excel.

AMERICAN GRAPHITE forever!

Say we who know black-lead from coal,  
And Dixon, the maker so clever,  
Deserves to stand high on Fame's roll.  
At big CRUCIBLE WORKS, in New Jersey,  
The DIXON lead-pencil is made  
By artisans clad in warm kersey,  
Each one very skilful, 'tis said.  
They must be, for Faber no longer  
Is king of the cedar-wood knights,  
Yet DIXON, much younger and stronger,  
Every user of crayon delights.

### MIL GRACIAS.

"GRAPHITE" is a model of what a "house organ" should be. It is issued monthly "in the interest of Dixon's graphite productions," by the Joseph Dixon Crucible Co., Jersey City, N. J., is full of good things, and any one reading it must come to the conclusion that a concern able to get up such a smart little publication must surely furnish a good product in their regular business.

—*Mining and Scientific Press.*

A TEACHER in a Texas public school received the following letter the other day:

"Sir: Will you in the future give my son easier some to do at nites? This is what he's brought hoam two or three nites back: 'If fore gallins of bere will fill thirty to pint bottles, how many pints and half bottles will nine gallins of bere fil?' Well, we tried and could make nothin' of it at all, and my boy cried and laughed and sed he didn't dare to go bak in the mornin' without doin' it. So I had to go and buy a nine gallin keg of bere, which I could ill afford to do, and then he went and borrowed a lot of wine and brandy bottles. We fill them, and my boy put the number down for an answer. I don't know whether it is right or not, as we spilt some while doin' it. P. S.—Please let the next some be in water, as I am not able to buy more bere."—*N. Y. Tribune.*

GENIUS is really only the power of making continuous efforts. The line between failure and success is so fine that we scarcely know when we pass it. Many a man has thrown up his hands at a time when a little more effort, a little more patience, would have achieved success. As the tide goes clear out, so it comes clear in. In business sometimes prospects may seem darkest when really they are on the turn. A little more persistence, a little more effort, and no failure except in no longer trying. There is no defeat except from within; no really insurmountable barrier save our own inherent weakness of purpose.

—*Selected.*

### THE MILLIONAIRE'S DREAM.

On the great estate  
That came to him by a kindly fate,  
A gray-haired man in the fading day  
Is raking slow the fresh-mown hay,  
In his eye the remember'd joy  
Of a care-free farmer's boy;  
Now, as then, his nostrils fill  
With the meadow's perfume, till  
Once again he's treading where  
The breath of clover fills the air;  
And beside the moss-grown fence  
Wild red roses shed their scents.  
From the thistle, swaying, free,  
A lark pours forth his melody—  
But no note has he so clear—  
None so sweet to the dreamer's ear,  
As was her's in the long ago,  
When the sunset's golden glow  
Fell where fragrant windrows lay,  
And she raked with him the hay.

—F. G. BARRY in *Leslie's*.

### GERMANY TESTS GRAPHITE.

An interesting experiment on the use of graphite in connection with oil for lubricating machines has been carried out in Germany. The addition of a small amount of graphite to the oil seems to be a decided advantage. The experiments were carried out upon locomotives of the Saxony railroads. The usual lubricating oil was mixed with a small percentage of a very pure graphite in the form of small and very thin scales. In the case of journal boxes, these were filled up with waste which had been saturated with the mixture of oil and graphite and also with a little tallow, and the waste was strongly compressed upon the journals. In the case of oilers for other parts of the mechanism, they are filled with the oil and graphite mixture. The consumption of graphite is very small, only 200 grammes for a run of 5,000 miles. The experiments have proved so successful that it is now proposed to use the mixture exclusively. Where ordinary lubricating oil is used at the rate of twenty-two grammes per kilometre the new mixture requires only ten grammes.—*Electrical Review*.

### DIXON'S "ETERNO."

"Eterno" is not a new breakfast food; it is something still more remarkable and more likely to live up to all that the advertisements assert about it, inasmuch as it is made by the Joseph Dixon Crucible Company. "Eterno" is a pencil which writes black and copies purple; that is, if you want it to copy, and it is indelible all the time. The man who carries a Dixon's "Eterno" in his pocket is the master of an ink well, a fountain pen and a pencil all together, with which he can sign his type-written business correspondence and the signature will copy with the rest of the letter. He may write checks, make his will, or do anything with it but write love letters, unless he is quite sure he will never, no never, change his mind, for "Eterno" is indelible.

—*Stove and Hardware Reporter*.

### UNEXPECTED.

When a beggar asked a Philadelphia stationer the other day for help the latter offered him two lead pencils, saying:

"With half the effort required in begging you can easily sell these for five cents apiece."

The beggar gazed at the pencils scornfully.

"Who'd give me five cents for them?" he demanded.

"Why anybody," said the stationer. "Go out and try it."

"Would you?" asked the beggar.

"Why certainly," was the reply.

A smile of triumph spread over the grimy features of the mendicant.

"Here you are then," he said. "Gimme the ten cents. You can't go back on your own word."

It took the stationer several minutes to recover his breath, but he finally entered into the deal and hereafter will adopt other tactics.—*Geyer's Stationer*.

### GRAPHITE FOR DIFFICULT LUBRICATION.

(Reprinted from *Louisiana Planter*.)

JERSEY CITY, N. J., Sept. 24, 1903.

*Editor Louisiana Planter:*

We have read with much interest your article in issue of September 5th, entitled "Lubrication." We have good reason to believe that you are quite right in your statement that lubrication is one of the most difficult problems that confronts sugar house engineers. During the time when extra heavy work is demanded of sugar house machinery, even the very best of oil seems to fail in properly lubricating cylinders and bearings. It is then that the value of a pure flake graphite can be tested and appreciated. Permit us, please, to quote from a letter received from the chief engineer of a plantation in St. Mary's parish:

"Last year in our grinding season everything was strained to the utmost. I had the best lubricating oil in the market, but about the third week I was crowding my mill up to twelve tons an hour, and found I would have to let up, as my cylinders wouldn't stand it, even with the best oil and a sight-feed lubricator dropping five drops a minute. It occurred to me to use some of Dixon's flake graphite, which I had been using on my gears. I did so, and you cannot imagine what a difference it made in the handling and running of the mill machinery. \* \* I buy only the pure, dry flake and use it dry or mix it with oil or otherwise."

JOSEPH DIXON CRUCIBLE CO.

### GRAPHITE TO STOP CUTTING OF A VISE BOX.

From J. E. Erickson, Worthington, Minn.—As a reader of *The Blacksmith and Wheelwright* I will send you a word of practical experience.

I bought a new vise last winter, and it was only a short time until it started to cut in the box. I tried almost everything without any help, until I thought if graphite will stop the cutting on a bicycle chain, it must help in a vise box; and it did, as I have used it at least three weeks with only one application, and it is not expensive.

I hope some other smith can also make use of this.

—*Blacksmith and Wheelwright*.

## RUST.

A Brown Study on a Brown Subject.

Messrs. J. B. & C. T. Moffett, wholesale and retail dealers in paints and oils, Minneapolis, Minn., send us for "GRAPHITE" the following original paper on "RUST."

The technical papers for years have discussed the very important subject of rust prevention, but Messrs. Moffett's contribution will be welcomed for the practical manner in which the subject is handled.

J. B. & C. T. Moffett's tribute to the economical features and protective qualities of Dixon's Silica-Graphite Paint, is particularly gratifying by reason of their high standing in the paint world, and their knowledge of the service given by the thousands of gallons of this paint that they have sold in the State of Minnesota. They say:

"It is noticeable in every contest that each party to it spends considerable energy in finding out the nature, habits and force of his opponent.

Witness a glove fight: the papers are full of opinion and study of Fitz and Jeff or others, as the case may be. What private information is sought by principals and trainers may never come to the top to be gathered in by the press.

Witness what appears to be the approaching contest of nations in the far east. We have page upon page of the resources, valor and instruments of the Japanese and the Russians.

We offer these prefatory suggestions as an indication that a paint man should study his less apparent but very active opponents. And rust came also among them, the moth we can afford to leave to the dry-goods fellows.

The wise men who use all the new words in the language present our enemy in the following delightful picture: A drop of water ( $H_2O$ ) falls on a clean, bright surface of iron or steel, lately the pride of the grinder and polisher. For a few moments the drop of water hesitates, to give as it were a last view to the observer of the beauty of his neighbor's handiwork. But soon a greenish precipitate rapidly becomes a reddish brown. The brownish precipitate now becomes important, swells out its chest and insists on being called Peroxide of Iron by its friends, but is known as rust behind its back.

It still does not seem to bite or otherwise trouble the iron or steel, but navigates around from place to place in its drop of water. In other words, it waits—waits until all is quiet and the water is gone away by evaporation. Then our peroxide becomes a loosely adherent coating which may be easily removed while still young.

But, being left to grow for itself, this slight coating gradually becomes a scale. It continues to eat into the metal, removing the same by successive layers.

Iron and steel are not alone in this respect to rust, as most other metals undergo some superficial change under similar circumstances. But with iron or steel the change is rapid, and the film formed early in the process, instead of protecting the metal beneath from further action, as is the case with other metals, continues to increase in thickness. The action begun, unless checked, proceeds until the iron or steel is wholly converted into rust.

Iron remains quite free from rust, according to one

eminent authority, in an atmosphere containing oxygen, carbonic acid and water vapor (all present in a normal atmosphere except water vapor, which is rarely absent) as long as the water vapor does not condense as liquid water on the surface of the iron.

Owing to the hygroscopic character of rust, when it once forms on iron or steel the rusting process will continue in an atmosphere not saturated with water vapor. This point must show us the subtle nature of this destructive agent, and the care and activity we must exercise to forestall loss from this source. All exposed metal, such as exteriors of buildings, bridges, etc., are in proper condition to furnish basis for beginning of rust, and as all conditions whatsoever are conducive to its growth, it follows (and is admitted by the aforesaid wise men, being conclusive and not therefore liable to attack so as to injure their reputation as scientists) that the only way to combat rust is by preventive measures.

The preventive measure is, as it were, an early Sullivan rush to the middle of the ring and cover the metal exposed with a good coating—the best is the only economical covering. Dixon's Silica-Graphite Paint sheds water like a duck's back. It cannot be said whether the manufacturers have studied more the duck or the insidious rust process, but the result either way is of the highest order, and the leader among the preventive measures to protect all metal surfaces from destructive incrustation, where the galvanizing process is impracticable."

THE man who puts a steam, gas, or water pipe together with Dixon's Graphite Pipe Compound enjoys a degree of satisfaction not experienced when any other material is used. He knows to a certainty that the joint he has made will be perfectly tight, and he also knows that whenever it is required the joint can be taken apart with consummate ease.

# DIXON'S

## GRAPHITE AXLE GREASE

is sure to give satisfaction. Outlasts other greases and oils. Does not gum in cold, or run in warm weather.

The Easier the Axle  
The Stronger the Horse

SALT LAKE CITY, Utah.  
GENTLEMEN:—During the last year we have been using on the cars of this company Dixon's Everlasting Graphite Axle Grease. We are well pleased with it, and it has given the best of service.

Yours truly,  
A. M. HINCKLEY, Supt.  
Salt Lake Rapid Transit Co.  
For Sale by All Dealers  
JOSEPH DIXON CRUCIBLE CO., Jersey City, N. J.





## CHICAGO.

It has been said that Chicago in a business sense is the "Hub of the Universe."

The cartoonist pictures everybody here on the dead run. Even the telegraph messenger boy gets a "hump," and although he may stop to look at a fire he doesn't stay to put it out.

The wind blows faster and oftener here than anywhere else. People work more hours a day and more days in a year.

This is the home of the sky-scraper. New York was building houses below the ground three or four stories, until she happened to look over her shoulder and saw the twenty-four story buildings going up in Chicago, and then she sent her workmen aloft to build up instead of down.

According to the evidence of St. Louis, Chicago is also the home of the microbe, but this is in dispute.

A fat pig is killed here occasionally, but everybody knows about that.

The price of wheat for the whole world is fixed every day over on LaSalle street.

These are all things of which to be proud, but the best is yet to be told. The great and only Dixon has an office here, and will not rest content until every inhabitant of Chicago knows it. When all those sky-scrappers are painted with Dixon's Silica-Graphite Paint; when the squeal of the fat pig is stopped by Dixon's Lubricating Graphite; when everyone of those microbes buys a Dixon lead pencil; when the wind unceasingly whispers D-I-X-O-N—then we will rest content.—DUDLEY A. JOHNSON.

## THE BOILING POINTS OF CERTAIN METALS.

Krafft has determined the boiling points of certain metals by the use of vessels of quartz heated by an electric furnace. Zinc sublimes below 300 deg. and at 640 deg. distills fairly quickly; the corresponding temperatures for cadmium are 322 deg. and 448 deg. Selenium distills quickly at 380 deg., tellurium at 550 deg., boiling being observable at 535 deg. Lead boils rapidly and distills at 1,160 deg. Tin proved very refractory, no distillation occurring even at 1,100 deg. At 605 deg. antimony sublimes slowly, and at 775 to 780 deg. distills rapidly. Sublimation of bismuth commenced at 540 deg., the sublimate assumed the form of drops at 930 deg., and the metal boiled briskly at 1,050 deg. A slight mirror of silver appeared at 1,090 deg., and rapid vaporization proceeded at 1,340 deg. Copper and gold boil at too high temperatures to be examined even in silica; with the former a slight amount of sublimate formed at 1,315 deg., with the latter extremely little vapor arose even at 1,375 deg., which is near the point at which the resistance of silica breaks down.—*Scientific American*.

## DIXON'S GRAPHITED WOOD GREASE.

The superintendent of a western street railway company reports that a barrel of Dixon's Graphited Wood Grease lasted for 10,000 miles, while the best service gotten from any other grease was 7,000 miles.

## COFFEE ON CRUCIBLE EXPLODES IN MINT.

**Amateur Cook Joggles the Pot and Two Employes are Injured.**

To make good coffee: Put pulverized coffee and several quarts of water in a coffee pot. Place pot over red hot crucible. Joggle the pot. You will find that coffee made in this manner will go a great way.

P. S.—So will the pot.—Recipes from the Mint.

An explosion that shook the mint from foundation to roof a little before noon yesterday burned two amateur cooks and badly frightened the large force of men and women employes.

One of the crucibles in the melting room had just been emptied of its contents of molten silver. The gas which had brought it to white heat was still burning. The clock showed 11.30.

"Time to make coffee!" said one of the men.

A coffee pot was filled with water and ground coffee and placed over the crucible. Then some one joggled the pot. The water and coffee coming in contact with the heated clay caused the explosion.

William Moffatt and William Goodaxe, helpers in the room, were slightly injured by scalding water and flying bits of tin. The crucible resolved itself into its original dust; its furnace was a wreck, the coffee pot was scattered bits of flattened metal. Everybody in the room got a little coffee and a hot bath.

Moffatt's and Goodaxe's injuries were dressed at the Hahnemann Hospital, and they were sent to their homes.

—*North American*.

## GRAPHITE FOR LUBRICANT.

Eldorado, O.—Editor *Motor Age*.—Regarding a motorist's advice given recently in *Motor Age* concerning the use of graphite in the cylinder of a gasoline motor, my experience does not coincide with that of the gentleman, who said "don't."

I am a bicycle motorist and was lead to try graphite by earlier articles in *Motor Age*. I blew the graphite into the cylinder by means of a small tube. I also mixed graphite in liberal proportion with oil and injected it into the crank case. My motor in consequence of this treatment has far better compression than formerly, probably on account of the reduced leakage. Also and of greater importance, I have never been stalled because of a graphite coated plug insulator. This is probably due to action upon a tip received from *Motor Age*. About a year ago an extension tube for a spark plug was described and I adopted it. I made a tube 2 inches long with a 1/4-inch hole in the end that screws into the crank chamber. The plug screws into the outer end, leaving a considerable space for vapor within the tube. After having used the plug in this manner for 3 months it shows not the slightest trace of short-circuiting carbon deposit. The only difference in the action of the ignition is that on account of the distance which the flame must travel before it ignites the main charge in the combustion chamber, the point of ignition is somewhat back of the ordinary point. Hence it is necessary to have the spark lead advanced further.—J. HOLSINGER.

—*Motor Age*.

## EXTRACTS FROM THE PROCEEDINGS OF THE ROCKY MOUNTAIN RAILWAY CLUB

Of Denver, Colorado, November, 1902.

MR. HIGGINS (Engineer of Tests on C., B. & Q.): I had the pleasure of being in one of the large shipbuilding yards on the Clyde River in Scotland, this last summer, and I noticed that no lubricators were put on the engines. Upon inquiry, I found that no oil is used to lubricate valves or cylinders, except a swab on the piston rod. They use dry graphite only, and will run for six or seven days continuously and experience no trouble. This matter of valve oil has become a large item, and it seems to me that some investigation with graphite will surely pay.

MR. ROESCH: In regard to the graphite proposition I wish to state that we have been using graphite in connection with valve oil for lubricating cylinders for some time, by means of an automatic graphite lubricator, but its success depends largely upon the location of the lubricator. If we do not get the lubricator located at the proper point, much of the dry graphite is carried out through the exhaust—carried right out through the stack—but it has given us very good results as compared to oil lubrication.

MR. WELLS: You use it in connection with oil?

MR. ROESCH: We use it dry. The lubricator is attached to the steam chest, and it holds about three-quarters of a pound of graphite and makes 400 to 1,500 miles.

MR. WELLS: How much saving would that amount to?

MR. ROESCH: It saves about enough in oil to pay for the graphite. But it was not put on with the intention of saving oil; simply to save cylinders.

MR. PAXTON: I think the gentleman here made a remark about the use of graphite that has a great deal in it. High steam pressure as used nowadays, is accountable largely for the difficulty we have in lubricating locomotive cylinders, and if we keep on increasing the pressures we will find added difficulty in finding a fluid that will do the work. We will be compelled to resort to graphite, or do like the establishment the gentleman speaks of—run without oil at all.

### THE JAPANESE METHOD.

A young Japanese asked an English firm to give him a position, and, finding that he could speak and write English admirably, the manager agreed to give him a trial. Some days afterward the cashier summoned him and told him to write a letter to a customer who owed some money to the firm and who showed no intention of paying.

"Write briefly and politely," said the cashier, "but let him understand distinctly that we expect him to pay the money without any further delay."

The Japanese wrote the letter, and on the following day a check for the full amount due was received from the customer. Considerably surprised, the cashier asked the Japanese to give him a copy of the letter which had produced such quick effect, and here is what he read:

"Dear Sir:—If you do not send us at once the money which you owe us we shall be obliged to take steps which will cause you the utmost astonishment. Respectfully yours."—*Kansas City Independent*.

## ALL WORK IS FOR THE WORKER.

What becomes of the product of your work, and how the world receives it matters little, but how you do it is everything. We are what we are on account of the thoughts we have thought, and the things we have done. As a muscle grows strong only through use, so does every attribute of the mind, and every quality of the soul takes on new strength through exercise; and on the other hand, as a muscle not used atrophies and dies, so will the faculties of the spirit die through disuse. Thus we see why it is that we should exercise our highest and best. We are making character, building soul fibre, and no rotten threads must be woven into this web of life. If you write a paper for a learned society, you are the man who gets the benefit of that paper—the society may. If you are a preacher, and prepare your sermons with care, you are the man who receives the uplift—and as to the congregation, it is all very doubtful. Work is for the worker. We are all working out our own salvation, and thus do we see how it is very plain that John Ruskin was right when he said that the man who makes the thing is far more important than the man who buys it. Work is for the worker. Can you afford to do slipshod, evasive, hypocritical work? Can you afford to shirk, or make believe, or practice pretense in any act of life? No, no, for all the time you are moulding yourself into a deformity, and drifting away from the Divine. What the world does and says about you is no matter, but what you think and what you do are questions vital as fate. No man can harm you but yourself. Work is for the worker.—*The Gregg Writer*.

### ANSWERING CHEAP ADVERTISEMENTS.

A man who answered in the cheap "story papers" has had some interesting experiences. He learned that by sending one dollar to a Yankee he could get a cure for drunkenness. Sure enough he did. It was to "take the pledge and keep it." Later on he sent fifty two-cent stamps to find out how to raise turnips successfully. He found out—"Just take hold of the tops and pull." Being young, he wished to marry, and sent thirty-four one-cent stamps to a Chicago firm for information as to how to make an impression. When the answer came it read: "Sit down on a pan of dough." It was a little rough, but he was a patient man and thought he would yet succeed. Next advertisement he answered read, "How to double your money in six months." He was told to convert his money into bills, "fold them," and he would see his money doubled. Next he sent for twelve useful household articles, and he got "a package of needles." He was slow to learn, so he sent one dollar to find out "How to get rich." "Work like the devil and never spend a cent." And that stopped him, but his brother wrote to find out how to write a letter without pen or ink. He was told to "use a lead pencil." He paid one dollar to learn how to live without work, and was told on a postal card to "Fish for suckers as we do."—*Exchange*.

DIXON'S Ticonderoga Flake Graphite largely increases the lubricating value of any oil or grease to which it may be added.

### THE ONLY WAY TO HOLD TRADE.

The *Grand Union Herald*, house organ of Jones Brothers, of Brooklyn, says :

"Cut-throat competition brings down prices on all lines of merchandise. Pirates enter into every business and they do not hesitate to adulterate the goods and lower the prices. Legitimate business does not permit these tactics, and in the long run such practices are not profitable. We find that the best way to hold a large trade is to make our values right, giving in every instance the best possible goods for the price. By doing this for over thirty years our reputation for reliability has been built up on broad and sure foundations. We have lived to see hundreds of competitors, who did not adhere to these principles, go to the wall."

We have been in business for not only 30 years but 75 years, and we can endorse the statement that reputation for reliability can only be established on the broad and sure foundation of best possible goods sold at right values. Our scrap book contains a surprisingly large number of would-be competitors that have exemplified the well-worn saying of "up like a rocket and down like a stick."

### AN ARAB SAYING.

"Man is four :

"The man who knows not and knows not he knows not, he is a fool—shun him.

"The man who knows not and knows he knows not, he is simple—teach him.

"The man who knows and knows not he knows, he is asleep—waken him.

"The man who knows and knows that he knows, he is wise—follow him."—*Translated by Susan Hayes Ward.*

### "THE MAIDEN'S PRAYER."

A white-haired matron of this city was listening, in company with a young man from the State Department, to the music of a pianist.

The selections were all new to the young man till the "Wedding March" of Mendelssohn began.

"That's familiar," said he. "I'm not strong on music, but I know I've heard that before. What is it?"

The matron's eyes twinkled with mischief. "That," said she, "is 'The Maiden's Prayer.'"—*Washington Post.*

AT THIS time of the year Dixon's Automobile Graphites appeal to the autoist with special force. If the auto is run the graphites are needed for better lubrication than oil or grease can give; and if the auto is put away for the winter all the valves and working parts should be covered with Dixon's Graphitoleo. It prevents rusting as nothing else will. All threaded joints should be opened and the threads coated with Dixon's Graphite Pipe Compound before the parts are replaced.

Dixon's Silica-Graphite Paint is largely used for the painting of iron fences. It can be so applied as to produce a flat or dull black, or a glossy black. It produces a most pleasing appearance, and as a preservative of the iron it is probably without an equal.

## Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, type-writer work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing.**

**Dixon's Plumbago for Powder Glazing.**

**Dixon's Plumbago Foundry Facings.**

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite.**

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Cycle Chain Graphites**, for perfectly lubricating chains and gears of bicycles.

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Anti-Flux Brazing Graphite**, to prevent the spelter from adhering when brazing.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

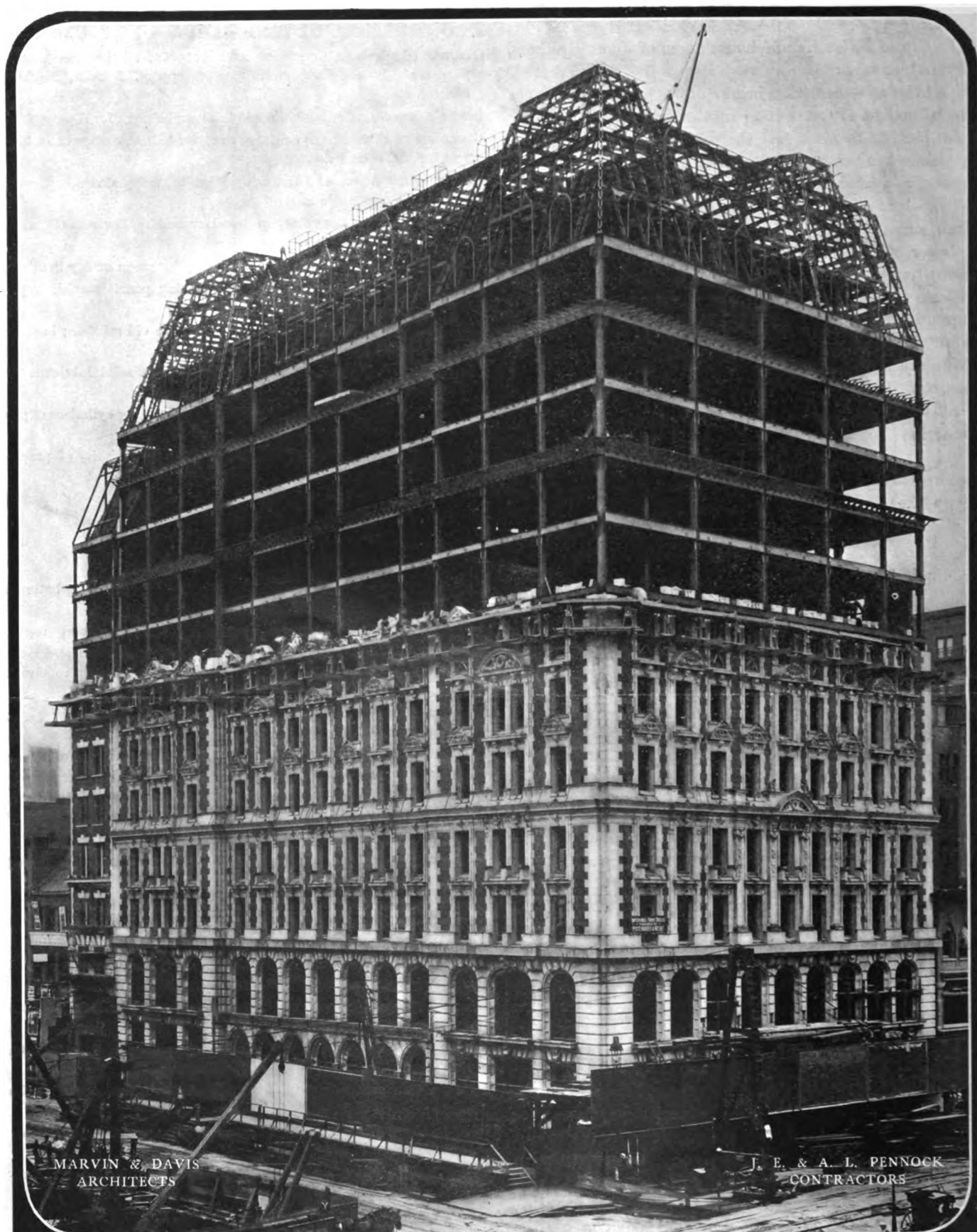
**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians.**

Special circulars with detailed information sent on request.



THE KNICKERBOCKER HOTEL, BROADWAY AND 42D STREET  
NEW YORK CITY

THE STRUCTURAL STEEL IS PROTECTED WITH DIXON'S SILICA-GRAPHITE PAINT  
MANUFACTURED BY THE JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.

# Graphite

VOL. VI.

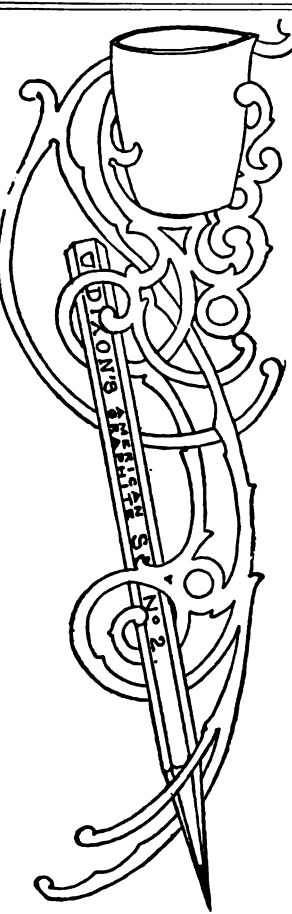
JANUARY 1904.

No. 2.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

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## THE INDISPENSABLE MAN.



Every now and again we read of this, that or the other man who is "indispensable" to the success of some great enterprise, and certain men, inflated by a measure of temporary accomplishment, come to regard themselves as not only the king bolts, but the whole running gear of the machine of which they are a part. Hack writers who make it their business to ladle out platitudes to young men urge their readers to "make themselves indispensable" to their employers, and many an otherwise clever youth has had his usefulness destroyed by getting to imagine that he had arrived at the state of indispensability.

It sounds like an Hibernianism, but it is almost true that no man is doing his work so well that somebody could not be found who could not do it better,

and when a man comes to regard himself indispensable there are few who would do it so badly. The man who really accomplishes the good work in this world is the one who is always trying to do it better; when he becomes "indispensable" it is time for him to die.—*The Journalist.*

## VALUE OF GRAPHITE IN THE PRESERVATION OF THREADED FITTINGS.

Over four miles of 1 inch and 1¼ inch pipe, in a new brick dry kiln of a large South Carolina lumber company, were completely fitted before a radical error was discovered in the design, requiring extensive rearrangement of piping.

The changes were made only after several weeks delay, and many barrels of nipples and fittings removed from the work and other sizes substituted.

It is noteworthy that these fittings passed a close inspection at the company's supply department and were returned to stock, though they had been fitted weeks before, and after removal exposed to rain and dampness, lying on mortar-spattered ground. The pipes had been fitted with a mixture of Dixon's Pure Flake Graphite and cylinder oil. The boss fitter was a "boiler nigger" of the U. S. Navy then on furlough, and perhaps did not then know of the peculiar merits of Dixon's Pipe Joint Compound, though he showed a knowledge of the incomparable value of Dixon's Pure Flake Graphite in pipe fitting.

## WE HAVE SET THE PACE.

The Dixon Company have set the pace for fine graphite productions. When others possess themselves of equal experience, and equal materials, and equal enthusiasm and skill, and desire for the production of fine grades, then Dixon's graphite productions will have real competition, and not one moment before.

Unfortunately for the public, the nature and qualities of graphite and its differences are not generally known, else it would not be possible for parties to sell the "graphite" goods that are sold,—in one case the material being 78 per cent. mica, polished with amorphous graphite.

## GRAPHITE FOR BOILER PLUGS.

In a prize paper read before the Pacific Coast Railway Club, by M. E. Wells, Boiler Inspector B. & M. R. R., we find the following concerning the use of graphite on boiler plugs:

"Plugs should always have mixed oil and graphite put on them before screwing in. Then screw in with the fingers as far as they will go; and they should go within a very few turns of being tight. This practice will insure not getting plugs in cross-threaded. They should not be screwed in with a long wrench and as hard as a man can pull. A 16-inch wrench, used with one hand, makes them tight enough. The plug will last longer, will not leak, and will come out so much easier the next time. A shoulder is put on many plugs by being pulled in too tight. Then time is lost getting them out."

## NEWS BOILED DOWN.

The New York *Sun* prints the following from the *Winchester Democrat* of Kentucky, and the *Sun* itself in its palmiest days of boiling down couldn't have told it better.

Brown came to town.

Brown was a barber and started a shop.

Brown prospered.

Brown was good looking; wore good clothes and diamonds.

Brown was a would-be society pet, and aspired the companionship with the "high rollers."

Brown took goods from the depot platform that did not belong to him.

Brown was arrested; indicted for housebreaking, tried and acquitted.

Brown had a confederate, but didn't "squeal."

Brown had a big roll of money after paying his attorneys.

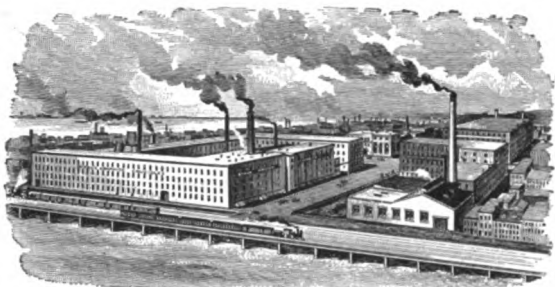
Brown left town.



ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J., U. S. A.

### BRANCHES AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Horgen (Switzerland), Finland, Havana.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., January 1904.

### "GRAPHITE" FOR 1904.

"*Tempus fugit*" is, we believe, the way the Latin scholar puts it, but time skips, and skips faster and faster as the years roll on. It seems like yesterday since we wrote similar lines in 1902.

The year 1903 has brought us increased business, making it our banner year, and we believe 1904 will do likewise, for we think our business depends upon ourselves, and for ourselves we know at least this that our plans are broad; our energy never was greater, our will to advance was never so strong. Then, too, we believe in our star. We keep our powder dry, but we have faith in our destiny. Dixon has not worked from nothing up to our present mammoth size, not to be greater still in due time—so we enter 1904 trusting to the effects of hard work, and with faith in our star.

To our customers, whose number is legion, we can simply say: We are proud of them, one and all. They buy good and they pay well, with here and there a measley exception. These customers are in every land, speak every language, and some one of us can reply to them in English, German, French, or Spanish.

With our staff—the superintendents of works here, at Ticonderoga, at Florida,—with the branch house managers and their rank and file, and with our large staff in the field we are, as President Roosevelt puts it, *de-light-ed*.

So let time fly—if we will be up to our opportunities and destiny will see to it that opportunities come—we shall win!

—JOHN A. WALKER.

### THE COST OF A LEAD PENCIL.

The cost of a first-class lead pencil does not lie in the wood, although no expense should be spared in securing smooth, straight grained Florida cedar. Neither does it lie in the burnishing and finishing of the wood; nor in the beautiful gold stamp, even when the purest leaf is used.

The cost of a first-class pencil lies in the time and labor spent upon the so-called "lead." This lead should be of the finest graphite, and the clay which binds the particles of graphite and determines the degree of hardness should also be of the finest quality. In the first cost these "lead" materials are not expensive, but in order that the leads may be of perfect smoothness and fineness and free from grit, the graphite is most carefully floated through water, time and again, and then filtered and mixed with the clay which has also been subjected to thorough and careful treatment.

The proportion of clay determines the degree of hardness, and therefore in order that the leads may be uniform in hardness as well as toughness, long continued mixing and grinding are necessary, as well as other painstaking operations, before the leads are perfected and ready for the wood.

This will explain the difference between a Dixon "American Graphite" and a pencil that "looks just as good."

### SOME ODD WAYS OF MAKING A LIVING.

Queer Avocations Disclosed by Sign Boards in the Streets of New York.

Placards and sign boards in New York disclose some strange ways of making a living.

In East Thirty-fourth street a sign in the window of a house informs the public that "Birds are boarded there by the day, week or month." A little further down town a sign in a basement window announces that "Dog's ears and tails are cut in the latest fashion," and a sign in the same locality reads: "I educate cross cats and dogs to be gentle and well behaved."

Young ladies are invited to come in and learn the name and calling of their future husbands in West Twenty-third street, near Eighth avenue. "Round-shouldered people made straight," is an announcement on East Nineteenth street, and near Nineteenth street on Fourth avenue "perfect grace is taught in twelve lessons," and "satisfaction guaranteed." "Beauty pads for thin ladies" may be obtained on the Bowery, near Houston street; and not far away "ladies deficient in wardrobe are fashionably dressed on easy, monthly installments."

"Sore eyes in poodles effectually cured here," is a piece of valuable information given in East Broadway. In Catharine street "Babies are hired or exchanged," and in Division street "Old sets of artificial teeth are bought and sold." In Hester street "Black eyes are artfully painted over," and "false noses as good as new and warranted to fit" are advertised near Chatham Square, conveying the impression that mayhem is not an uncommon crime in some quarters.

In Chatham street the wayfarer is told: "Dine here and you will never dine anywhere else," and in Mulberry street an undertaker makes a bid for business with a sign in his window which reads: "Why walk about in misery when I can bury you decently for \$18?"—*Mail and Express*.

### A SUCCESSFUL CONVENTION.

The thirteenth annual convention of the International Association of Superintendents of Bridges and Buildings, held in Canada, was one of the largest and pleasantest gatherings ever enjoyed by the members and guests of that energetic organization.

A representative of the Joseph Dixon Crucible Company was among those present. The business sessions of the Association were held at The Chateau Frontenac, Quebec. Much hard work, which always characterizes the meetings of the bridge superintendents, was accomplished.

Many interesting side trips about the citadel were enjoyed, including a sail on the St. Lawrence and a visit to the famous Basilica of St. Anne de Beaupre and the falls of Montmorency. After four days in Quebec the party boarded a special train, arranged by the Intercolonial Railway, for a trip through the maritime provinces.

Moncton, New Brunswick, was the first place visited and the guests were given a royal welcome in the curling rink where a dinner was served. The following day, Sunday, the excursionists passed in Halifax, Nova Scotia. Many of the party availed themselves of the opportunity to attend service in the garrison chapel, the place of worship of the English soldiers stationed in the city.

Monday was passed in Sydney, where the Dominion Iron and Steel Company's plant was inspected, and a trip made to Marconi's station, where a glimpse of the towers was obtained from which the wireless messages were sent.

The next day in St. John was enlivened by a sail on the attractive harbor and to the renowned reversing falls. After leaving St. John the party went to Montreal and dispersed with enthusiastic praise for the admirable manner in which the plans for the excursion had been fulfilled.

The scenery along the entire route was most picturesque and many bridges of interest were inspected. It was a magnificent trip and all the guests in the party expressed their appreciation of the many courtesies extended by the gentlemen of the association.

### GRAPHITE LUBRICANTS.

The Joseph Dixon Crucible Co., of Jersey City, N. J., has issued to the trade, a neat catalogue describing and giving prices of the factory's output. The graphite business of this company has grown wonderfully within the past few years, and the reason for this is the great care taken by the management, to give the best for the least price. The company has been in business nearly 80 years.

—*Packages.*

### JOSEPH DIXON GRAPHITE AT A. I. A. CONVENTION.

To have an important article with a thousand uses and to show the significant ones to the purpose to the most point and sightliness is what the Joseph Dixon Crucible Co. did at their clever exhibit at the Hollenden, during the American Institute Architects' Convention. They let it be known they were the largest graphite paint manufacturers in the world, and why not, owning their mines at Ticonderoga, N. Y., and they let the architects know it in a way to appeal to their artistic sense. Graphite in various states and uses was shown, crucibles, which the architects

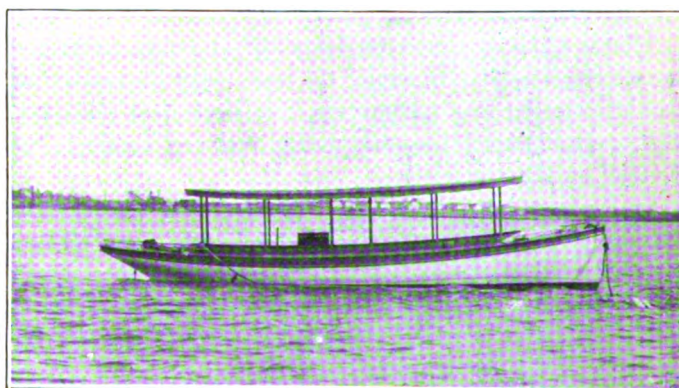
did not care about, for they don't melt their gold down, and pencils, which they do use. The Dixon people have 700 different styles of pencils, and they gave away many of the varieties at the convention. They make 254 a minute, though, so they could afford to. The immense surface covered with graphite paint on the North German Lloyd S. S. Terminal, at Hoboken, N. J., were illustrated, and the views of the Knickerbocker Hotel, New York, as well as the Belvedere Hotel, seemed like belongings of the parlor, till they told you they were recent buildings where graphite paint was supplied. W. A. Houston ably represented the exhibit.—*Ohio Architect and Builder.*

### THE RELATIONS OF OIL AND GRAPHITE.

The relations of oil and graphite are of the most friendly kind. Both can go it alone, but each does its best work when helped by the other, except in very special cases. In all ordinary practice five or ten per cent. of graphite, if it is of Dixon's Pure Flake Graphite, will largely increase the lubricating value of any oil or grease. Take the very best lubricating grease you can find. Test it on bearings, then add a little of Dixon's Pure Flake Graphite and you will find that grease and graphite will do six times more work than the grease did when used without the graphite. This has been demonstrated. It is a fact. Locomotive engineers throughout the country know how much further both engine oil and valve oil will go when Dixon's Pure Flake Graphite is added. Oil is affected by heat and cold, while graphite remains unchanged no matter how great the heat or cold may be. Oil gums, while graphite never gums or gets sticky.

For cooling rod pins and curing hot boxes, there is nothing equal to Dixon's Pure Flake Graphite.

Graphite mixes readily with oil, but is liable to settle, so should not be allowed to stand in oil cup. The time may not be far away when no railroad will be without a supply of Dixon's Flake Graphite for its engineers and machinists. Few are now.



"GRAPHITE"

This is the name of the new boat purchased by the Dixon Company for the use of Mr. C. E. Herrick, superintendent of the cedar department, Crystal River, Fla.

It is a powerful and serviceable gasoline launch, made by the Daimler Company, and under command of Commadore Herrick will tow cedar rafts, and transport supplies to the distant cedar camps and make itself generally useful.





MACHINA DE SAN FERNANDO.

The engineering profession and shipping world will be particularly interested in the illustration of the Machina de San Fernando, at Havana, Cuba.

This is a 150 ft. tripod derrick with two points fixed, and the third adjustable to swing the apex with its suspended tackle over the load on lighters, and back over the quay. The operating machinery and sliding foot are housed in the divided building beneath.

In August GRAPHITE we illustrated the Santa Cruz Bridge (steel), Manila, which is painted with Dixon's Silica-Graphite Paint, and as further evidence of the popularity of this product in tropical climates, we are permitted to publish a letter from Mr. M. F. Rowe, contractor for the painting of the Machina.

HAVANA, CUBA, OCT. 12, 1903.

MESSRS. BLASCO & Co., Havana.

GENTLEMEN:—I have recently used Dixon's Silica-Graphite Paint (natural color) in painting the Machina de San Fernando of this City. The paint has certainly proved its worth and all that the manufacturers claim for it.

I take pleasure in recommending Dixon's Silica-Graphite Paint to anyone who has use for paint.

It is positively the best, and its great covering capacity makes it the cheapest paint on the market.

Very respectfully,

(Signed) M. F. ROWE.

#### PAINTING THE CHINESE PAVILION.

World's Fair, St. Louis.

A force of five Chinese painters are at work under the foremanship of Yu Kit Men, attaché of the office of the Chinese Vice-Commissioner, painting rafters and purlins of the Chinese national pavilion. Saturday the painters visited the model of the Chinese building in the basement of the Director of Works building and noted the colors needed. They brought with them their tools ready to begin work. The tools consisted only of a number of brushes of Chinese pattern. These brushes are flat and show about a quarter of an inch of bristle. The bristle goes some distance into the brush and is sharpened like a lead pencil as the bristle wears out from use. Unlike the American usage, the Chinese painters apply the base or priming coat of paint before the timber is put in place. It will be some time before the rafters and purlins now being painted will be used on the building, as these timbers support the roof. The color used in the painting is a flesh tint which the painters brought with them from China. The contractor supplies the linseed oil and white lead, while the Chinese supply the coloring matter. The Chinese carpenters will not be used on the building until the rough

framing is entirely in place. These carpenters will install the ornamental carving which will be brought from China.

—*The Builder.*

#### WORKING OVERTIME.

We are handed the following from *The Outlook*, with the remark that it is "good for GRAPHITE."

"It cannot be said that all men who willingly work overtime reap their reward; but it can be said that no man is reaping the highest rewards or the largest rewards who has not, sometimes for years together, worked overtime. The fear of working overtime is a kind of cowardice which defeats all noble ambitions and condemns a man to mediocrity: eagerness to work overtime when there is work to be done is a sign of a true workman."

"Eager to work overtime when there is work to be done," undoubtedly "is a sign of a true workman," but is it wise or in any way desirable to permit such a man to work overtime, except for a brief time in an emergency? And can a man conserve brain and body who, beside putting in full time of hard, earnest work, continues to work overtime, including Sunday and holidays?



It would be very hard to find three graphite productions more generally useful than the three illustrated above. They should be found in every office, every home, every shop and factory.

Dixon's No. 635 Special Graphite has a specially wide field of usefulness. It is a very finely pulverized flake graphite and has been successfully used for lubricating the most delicate mechanical movements and the heaviest machinery. It largely increases the lubricating value of any oil or grease to which it may be added. It is used in dry form for lubricating springs of clocks, phonographs, etc. It has a never-ending field of usefulness.

Dixon's Graphitoleo is a mixture of Dixon's No. 635 Graphite and a very high grade petrolatum, which is only another name for vaseline. It is put up in small and large collapsible tubes and in cans of 1 pound to 100 pounds. A  $\frac{1}{2}$  pound tube is a necessity to every autoist and to every business office. The anti-rust properties of vaseline are well known, and every sportsman who has used Dixon's Graphitoleo in his gun barrels and lock actions knows its great value.

Dixon's Graphite Compound is not a lubricant, but an article made for use on the threads of all pipe joints. It is put up in collapsible tubes and in various sized packages according to the demand. When used on any pipe fittings, whether on a gas tip or a ten inch steam, water or gas pipe, an easier and tighter fit can be made, and if it is ever desired to open the joint it can be done with great ease and the threads will be found clean, unbroken and free of any rust.

#### ABOUT SCIENTIFIC LUBRICATING.

The graphite from the Ticonderoga, N. Y., mines occurs in the form of a fine, thin flake, scattered through the containing rock, special process of milling being employed to make the necessary separations. It is most desirable to give particular attention to a consideration of the size and shape of these flakes in order to better understand why this form of graphite is so clearly indicated for lubricating use. If one will place a few flakes of this form of graphite in the palm of the hand and try to feel them with the tips

of the fingers, it will be found that their thickness makes no impression on the very sensitive nerve tips.

By the use of the micrometer caliper, the average thickness is found to be about .0003 inch, or  $\frac{1}{10}$  of the thickness of a piece of ordinary writing paper. These flakes are approximately circular with an average of about  $\frac{1}{40}$  of an inch, so that if, for purpose of comparison, you will magnify a flake to the thickness of a piece of writing paper, you will find that its diameter then will be about  $\frac{1}{4}$  of an inch, so that the form of the flake of the graphite may be considered as practically the same as a piece of paper  $\frac{1}{4}$  of an inch in diameter.

Every one knows how difficult it is to remove a small piece of paper of this form from the floor or desk by means of a broom, and the same reasons which cause the paper to adhere to the floor or desk, cause the flake of graphite to adhere to the surface which it is intended to lubricate. These flakes tend to cover over the entire fractional surface, filling up all depressions and bringing the surface much nearer to a state of perfect smoothness. The particles of graphite do not act at all in the same way as a globule of oil rolling between the fractional surfaces; its form permits no such action as this. It must be considered simply as a coating on the metallic surfaces, which brings about a reduction of the solid friction between those surfaces.

There never need be any fear that Dixon's flake graphite will build up on itself to the extent of causing the moving parts to bind, because graphite is the softest of all minerals, being worn down easily by rubbing with the fingers, so that any tendency to build up is at once overcome by the wearing of the moving surfaces.—*American Contractor*.

#### BLACK LEAD FOR TAPPING.

Some time ago one of your correspondents described the job of tapping holes in tool steel as the "most measley job that came in a machinist's way." I struck such a job the other day, and I quite agreed with him at first, but, noticing a cake of black-lead (such as used for cleaning stoves, etc.) on the bench I thought I would try what effect it would have; so I greased the tap thoroughly and then ran the cake of black-lead along the teeth of the tap (which was a poor one, but the only one I had of the size), and I was surprised at the result. The steel was tapped with little, if any, more trouble than with wrought iron, and with a tap that before would do nothing else but bind and groan.

This may not be new to your readers, but it was to me, and, if it is not, somebody like myself may find some benefit from it. I have learned a good many wrinkles (kinks, you call them) from the *American Machinist*, and shall be glad if I can give a little in return.

—A TWELVE YEARS READER.

If "Reader" should get a stick of Dixon's Graphite, such as is used for lubricating bicycle chains, he would very likely find it just what he requires for his purpose.—EDITOR.

#### WE GET WHAT WE PAY FOR.

We are told that a buyer gets just what he pays for and no more,—if he buys inferior goods he has himself to blame and no one else.



### THE TREATMENT OF AUTOMOBILE CHAINS.

In the treatment of chains it would seem that the practice now in use in Europe ought to be a most excellent one for use here, that is, to regularly treat the chain with a lubricant to which the dust and dirt will not readily adhere. Furthermore, instead of simply putting the lubricant on the outer part of the chain, it is removed and immersed in the lubricant. The best form of lubricant is one which is hard and in which graphite forms a large part. A lubricant of this form is manufactured by the Joseph Dixon Crucible Co., of Jersey City, N. J., and is put up and sold in the form of a cake weighing about three pounds. The cake is broken and part of it or all of it, as the case may require, is placed in a pan and heated to about 180 degrees. The chain previously cleaned is immersed in the hot lubricant, withdrawn, hung up, and later on, after it has cooled, the surplus lubricant may be wiped off and the chain put back in its place.

By this method the pins or pivots holding the links are thoroughly lubricated, while the outer part has only a superficial coating, sufficient, however, for the work. A chain so treated should be serviceable for 250 to 500 miles, according to the roads and conditions.—*Automobile Review*.

Dixon's Pure Flake Graphite is without a rival for smoothness and as a lubricant. It is recommended as such by the best authorities on lubrication and by the practical engineer. We prepare it in dry form so that it may be mixed with any oil or grease in any proportion that the condition may require. We also prepare it in the form of mixed lubricants, using in the manufacture of our lubricants oils and greases of the highest lubricating value.

We are also manufacturers of all forms of blacklead crucibles and retorts for melting metals of all kinds.

We manufacture graphite paints for the protection of iron structural work; in fact, there is nothing in the way of graphite products that we do not manufacture.

The Dixon Company was established in 1827 by Joseph Dixon and it is the largest house of the kind in the world.

If you are at all interested in products of this kind, we shall be very glad to send you our catalogue.

### DEVEILED EGGS?

The New York *Sun* says: What a man eats, that he is—a rule that applies to woman just as much or little. MRS. SARAH ROBER, philosopher and artist of the palate, has given a new explanation of the frequency of divorce.

"If fewer women ate eggs for breakfast," says this lady, "there would be fewer cases of divorce." Eggs make their eaters lazy. The feminine egg-eaters neglect their work. Their husbands are dissatisfied. Quarrels and divorces start from the egg. To the woman who doesn't have to do housework, eggs are just as pernicious. "The social leader who overindulges" in eggs "loses her brightness of eye, her piquancy and charm." Her husband "loses interest. Then come lawyers." Hens as a factor of divorce: there is a problem for the debating societies and the women's clubs.

ALI BABA says that some men's religion is like a ferry boat—has a pilot house on each end.

## Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, type-writer work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing.**

**Dixon's Plumbago for Powder Glazing.**

**Dixon's Plumbago Foundry Facings.**

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite.**

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Cycle Chain Graphites**, for perfectly lubricating chains and gears of bicycles.

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Anti-Flux Brazing Graphite**, to prevent the spelter from adhering when brazing.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians.**

Special circulars with detailed information sent on request.



### GRAPHITE FOR ROTARY VALVES.

The following comes to us from an engineer on a Canadian railway and it may prove of interest to those who are trying to find the best lubricant for a rotary valve:

"I received a sample of Dixon's No. 635 Graphite over a year ago, and wrote you sometime ago giving you an idea of how I used it on the rotary valve of engineer's brake valve (Westinghouse Brake). To give you now a more positive idea of how I prepare it, I send to you a sample of the lubricant as I prepare it.

"I take enough mutton tallow and mix the No. 635 Graphite with it until it just forms a paste, and then, after facing or cleaning the rotary valve, I just warm it a little and apply the graphite very evenly over it—just enough to cover very thinly—and have found nothing yet that will lubricate a rotary valve so long and keep it working so finely, especially on freight or switch engines, where the brake is in constant use so much. Have had these rotaries work on switch engines for three months, night and day, and when taken down they are still well lubricated and of fine surface."

We shall be glad to send sample of Dixon's No 635 Graphite to any engineer or official interested in the subject of better lubrication for rotary valves.



No. 25.—JOHN A. CONDIT.

John A. Condit was born to carry life and age easily,—not lazily, but easily. Although in the forties he appears like a strong, vigorous young man of thirty.

He began with the Dixon Company in 1896 as an assistant to Mr. Baird in the selling and advertising of Dixon's Stove Polish. He did his work so well that he was promoted to the staff of regular salesmen in 1899, and his work has continued to be most meritorious.

The phrenologists, Fowler & Wells, have furnished us the following reading from his photograph which was numbered 25. We were unable to obtain the photograph in time for our picture gallery shown in the October issue.

(By J. A. Fowler.)

This gentleman possesses a very keen and intelligent mind. He is able to discern many things that are not noticeable on the surface. He is able to read between the lines of things and take a hint when a full explanation is not

given him. He is able to use young men properly, that is, he can call out the fine ability or the excellent qualities of others to advantage. He should be good in organizing, planning, arranging and mapping out work for others, in fact his casuality is always manufacturing new ideas, and he is capable of widening his sphere of usefulness in the future by his capacity to understand men and make the most of opportunities as they arise.

He does not object to a little fun now and then and like Abraham Lincoln will mix it with his daily life, and will turn off disappointments or get rid of bores by this aid.

He has a keen eye to reckon up the profit and loss of things. He is shrewd in business matters and he is able to condense what he sees so as not to waste time in giving his directions.

He should be known for his energy, executiveness and power to expedite matters, for his foresightedness and ability to map out work for others, and further for his intuitive insight into the characteristics of those around him.

### GRAPHITE LUBRICANTS.

The Joseph Dixon Crucible Co., Jersey City, N. J., send us a booklet entitled "Graphite Lubricants." This tells how pure graphite has an unctuous quality in spite of its solidity; how there are variations in the crystalline form ranging from molybdenitish foliations to columnar constructions, formed like asbestos. This firm's graphite productions are Black-lead Crucibles and Retorts, Brazing Crucibles, Graphite Boxes and Covers, fine Office and Drawing Pencils, Colored Crayons, Lumber Leads, Felt Erasive Rubber, Carburet of Iron Stove Polish, Pure Flake Lubricating Graphite, Special Graphite No. 635, Electrotyping Graphite, Hatter's Lead, Plumbago for Shot Polishing, Plumbago for Powder Glazing, Plumbago Foundry Facings, Yacht Plumbago for lubricating and smoothing bottoms of yachts, Graphite Waterproof Grease for gears, wire ropes, hoisting chains and general machinery, Graphite Axle Grease, better and cleaner than castor oil for trucks, wagons, carriages; Graphited Wood Grease for use on trolley car gears which are inclosed in a gear case; Graphited Oil, Graphite Cup Greases, Oiled Graphite, Lubricating Compound No. 688, Silica-Graphite Paint, Graphite Pipe-Joint Compound, Cycle Chain Graphites, Graphitoleo, Commutator Graphite, Anti-flux Brazing Graphite, Crucible Clay and Graphite Mixture, Stove Cement, Traction Belt Dressing, Graphite Resistance Rods, Graphite Products for Electricians.

—*American Artisan Hardware Record.*

### THE JAPANESE.

The Japanese are a wonderful people, calm, collected, patient, peaceful and progressive. If an accident happens or a loss is made, they neither worry nor repine, but accept it as a thing passed and done. Therefore they accomplish more than either Americans or Englishmen. What they lay out to do, that is just what they attend to, and that is why they are making such wonderful progress in manufactures and other industries. No matter where these people go they make friends, they do not make enemies.

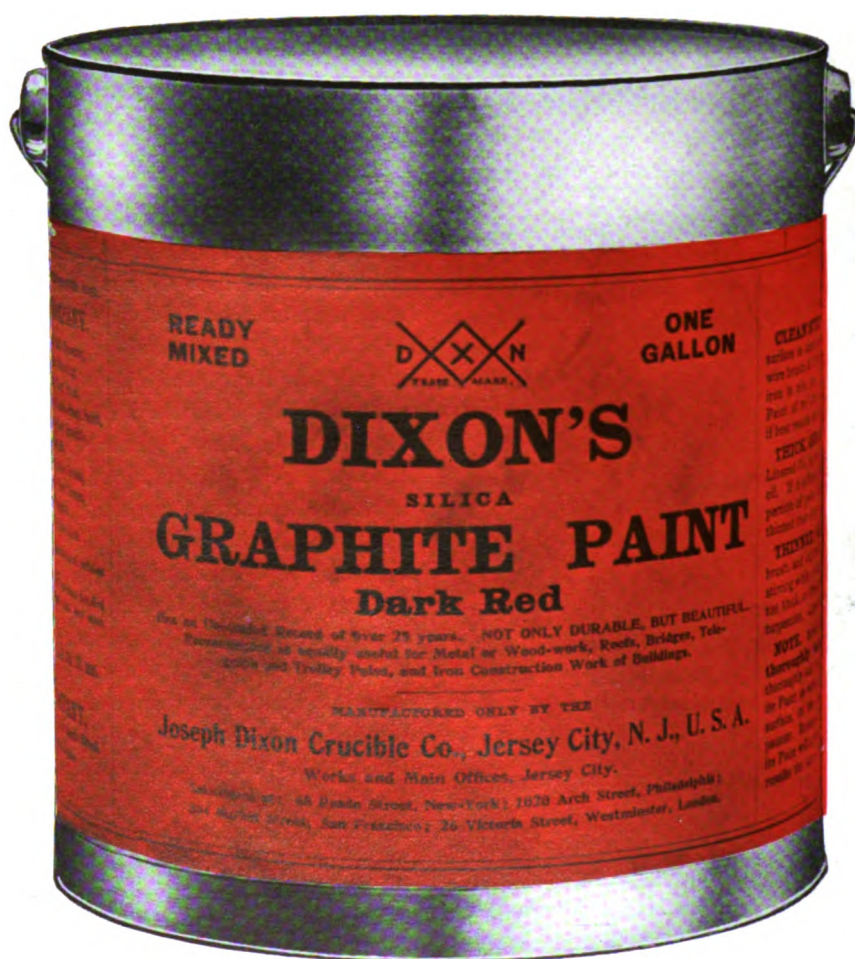
—JOSEPH M. WADE.

It was the *FIRST*

# GRAPHITE PAINT

and has always  
been *FIRST* in

**Quality, Spreading Capacity and  
Durability.**



MANUFACTURED ONLY BY THE

**Joseph Dixon Crucible Co.,  
Jersey City, N. J.**

# Graphite

VOL. VI.

FEBURARY 1904.

No. 3.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

*COPYRIGHTED 1903 BY THE JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J.*

## THE MAN WHO IS READY.

"There are more men who have missed opportunities than there are who have lacked opportunities."

—*La Beaumelle.*

The world wants the person who is ready.

It has no use for those who, when opportunity knocks at their door, are not prepared to bid it welcome. Be ready. Opportunities never wait.

All things in life require preparation. Without preparation there is no true foundation for lasting success. We see men do great things of which we never thought them capable, and we call it genius. No one has noticed the ceaseless toil, the years of quiet preparation that were behind that achievement.

Daniel Webster was once complimented upon a particularly brilliant extemporaneous speech. He replied

that what appeared to be extemporaneous was really the result of years of preparation, dating back to the debating club of his college days.

John C. Calhoun went to Yale to prepare for Congress. Ridiculed at one time by one of his fellow-students for his intense application to study, he replied: "Why sir, I am forced to make the most of my time that I may acquit myself creditably when in Congress." A laugh followed, when he exclaimed, "Do you doubt it? I assure you if I were not convinced of my ability to reach the National Capitol within the next three years, I would leave college this very day."

Ex-Senator Gorman, of Maryland, when a page in the Senate, was preparing to become a Senator.

Asked, "Did you think you would ever become a Senator yourself while you were serving as page?" he replied, "Oh, yes; I think my ambition ran that way, and I had then been through enough to know that when a boy tries with all his might to become anything in particular, he is pretty likely to attain his end."

When your opportunity comes be ready.

—*The Miller School of Business.*

"MEN are untruthful only when angered, uncertain or fearful. No man who wishes to see the truth and express the truth can afford to let things disturb him."

## THE "DRAG" OF A PENCIL.

The drag of a pencil is that which you especially notice when writing with a colored crayon, and to a more or less degree when writing with an inferior lead pencil. It is the drag of a pencil which tires the hand and makes long writing a wearisome task.

It is the absence of any drag that makes writing with Dixon's "American Graphite" pencils a positive pleasure. Dixon's "American Graphite" are used in more schools and colleges than any other pencils, because they are unequaled for smooth and tough leads. There is no drag in a Dixon "American Graphite."

## LINOTYPE GRAPHITE.

William P. Kelley, of the *Bay City Tribune*, Bay City, Mich., is kind enough to say:

"Samples of graphite which I received from you were used, and we find the dry to be just what we wanted. We ordered and received sometime ago a five-pound can from your Chicago office. We, in this office, believe it to be the best graphite on the market for linotype use."

"Thanking you for the samples and wishing you increased sales, I remain,

Sincerely yours,

(Signed) WM. P. KELLEY."

## DIXON'S "ETERNO" PENCIL.

The "Eterno" pencil, which has recently been placed on the market by the Joseph Dixon Crucible Co., Jersey City, will without doubt become as popular as the rest of the Dixon line. The pencil writes such a dark purple as to be practically black. Its lead is of peculiar smoothness and toughness. It writes freely and smoothly and holds a good, sharp point. Furthermore, its lead is indelible. It saves the annoyance of a fountain pen, and business letters written with "Eterno" and copied have the appearance and all the merit of letters written with high grade ink.

It is one of the best allround pencils ever put out, and costs no more than any other good pencil.

—*Commercial Record.*

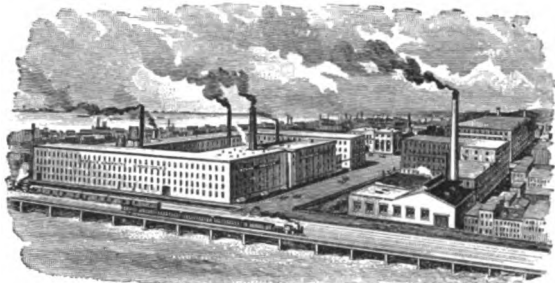
Traders Bank, Hamilton, Oct. 3, 1903.

We have tried the sample "Eterno" No. 2050 copying pencil which you sent us and find it fills all the requirements of a first-class copying pencil. It writes well and gives a good copy.

W. E. SOULE, Accountant.

ESTABLISHED 1827.

INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J., U. S. A.

### BRANCHES AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Morges (Switzerland), Finland, Havana.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
*President. Vice Pres. and Treas. Secretary.*

JERSEY CITY, N. J., February 1904.

### FOR SHAME TO CRY BAD TIMES, FOR SHAME!

Aggregate wealth of the country, one hundred thousand million, or one hundred billion; see it in figures: \$100,000,000,000. The capita wealth is \$1,245.00 for each man, woman and child on the soil. The country's export will go over \$1,400,000,000. Total deposits in American savings banks, \$3,000,000,000, three thousand million. Bank clearings in 1903 were one hundred and fourteen thousand millions. The wealth of the country is more equally distributed between the people, and more equally distributed as to territory than ever before.

There are plenty of places west of the Mississippi full of money, that would not know what Wall Street was unless some one told them. Down with the pessimist. Down with the coward. Down with the discontented, the lazy, the shiftless, thriftless, and wave this flag for the brave, the worker, the industrious, the saving man, the thrifty woman,—pitch in, work hard, and destiny will be on your side.—JOHN A. WALKER.

### TECHNICAL LITERATURE.

One of the distresses of the clay worker is that the subject of clay and its manipulation has little or no literature; none at all worth anything to the practical worker outside of the volumes of the proceedings of the American Ceramic Society, and this is all recent—barely five years old.

Even worse is the topic of graphite, and the graphite subject is still more circumscribed, as it has not a scrap of

worthy literature outside of the publications of the Dixon Company.

On graphite, the books and encyclopedias are all either silent or misinformed; hence, then, to ourselves, the Dixon Company, the world must come for the necessary literature on the graphite topic. Our various catalogues and booklets are good compendiums of the best, latest and most up-to-date knowledge on our specialty. Our catalogues and booklets and the copies of this monthly paper, contain more and better knowledge on the subject of graphite than is elsewhere in print or manuscript in any language.

—JOHN A. WALKER.

### DIXON 1904 HOLIDAYS.

New Year's day, coming as it did on Friday, carried with it the following Saturday.

Lincoln's birthday, February 12, is not firmly enough placed on the calendar for us to observe it as yet.

Washington's birthday comes this year on a Monday and the Dixon kids go off on the preceding Saturday to see their grandmas and return to their desks on the following Tuesday.

They do this again for Decoration Day which also comes on a Monday, and repeat it once more for the "Glorious Fourth," and then, still not satisfied, do it once again for Labor Day.

After that Dixon's gets the undivided attention of the office staff until Thanksgiving.

Christmas, 1904, comes on Sunday.

### A TREAT FOR OUR READERS.

After much correspondence and a special trip to New Haven, we have succeeded in arranging with the well known writer and mechanical expert, Mr. W. H. Wakeman, for a series of articles, which we can assure our readers will be both interesting and instructive. The first article appears in this number.

### MY FIRST EXPERIENCE WITH GRAPHITE.

By W. H. WAKEMAN.

The following incident happened when I was a young engineer. This may cause the reader to think that now I am an old engineer, and as nobody likes to be considered old and past the prime of life, some other expression might be more desirable.

On the other hand, every engineer wishes to be considered competent for every known service, which means that he has had extensive and varied experience, requiring much time for its accomplishment, and after this necessary time has elapsed he is no longer young, therefore he must choose between two apparent evils, as he cannot be called young and also be considered fully experienced.

Well, the incident happened several years ago, anyway, when I was engineer in a saw mill. Having written the preceding sentence, and giving it due consideration, I fear that it will strike some reader unfavorably, thus creating a wrong impression, because some people think that a saw mill engineer is unworthy of a place among competent steam plant managers. Owing to the fact that saw mill work is often hard and unpleasant, it does not attract the more



highly educated engineers, still I am willing to make the statement, without fear of successful contradiction, that when a man can perform the duties of a first-class saw mill engineer, with the tools and supplies usually furnished him, there is little danger of inability to keep the average coal burning plant in the best of repair.

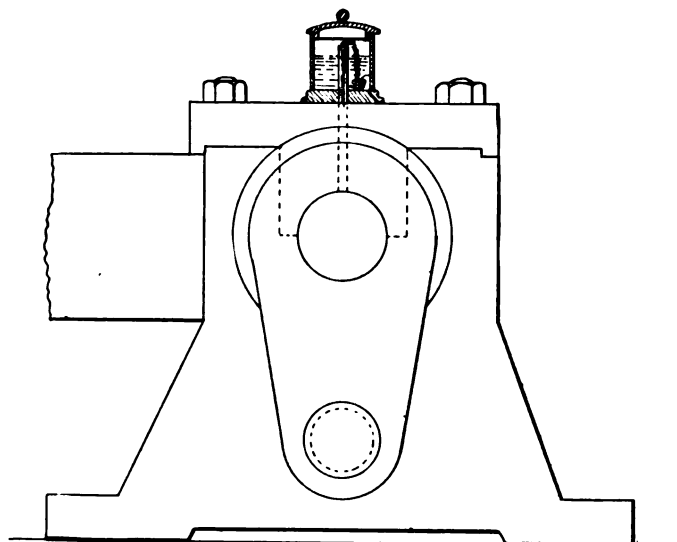
One reason why I am not in sympathy with the ridicule so freely bestowed upon the saw mill engineer, is that while in charge of this plant I was paid more than double the wages received by an engineer in charge of a plant near by, where iron goods were manufactured, who always used coal.

Only a few rods distant there was another plant, owned by a man of long experience, who was a great advocate of Dixon's Graphite for use on bearings that required special care, as he claimed that it would cool off a hot box quicker than anything else known to engineers and mill owners.

As already mentioned, I was a young engineer then, having strong ideas of my own about the proper management of a plant, and when I saw this lubricant that he talked so freely about, and found that it was as black as anything could be, consequently would make the oil black instead of red, as I preferred to see it, but short consideration was required to make me conclude that such black stuff as that should not be used on my engine.

This appeared proper at that time, but conditions were so thoroughly changed in the near future, that I considered the hue of Dixon's Graphite the best color that I ever saw, on account of its ability to help an engineer out of a bad scrape.

As a rule, a saw mill engineer has more to do than sit in an easy chair in his engine room and occasionally feel of the bearings, and my place was no exception to the general rule.



*Fig. 1.*

The main bearing of this engine was fitted with a cast iron oil cup which is illustrated in Fig. 1. A brass tube nearly to the top of it, in which was a piece of candle wicking, one end of it lying in the oil while the other extended down to the shaft, as shown. When the wicking was clean it would slowly siphon the oil out of the body of cup and deliver it to the shaft, but when it was foul no oil would be

taken up by it. It was necessary to remove the top and look into the cup every time the engineer wished to know how fast it was feeding, consequently when other duties demanded attention that was sometimes neglected.

One day this cup failed to feed and it was not discovered until the bearing was smoking hot. If it had contained a Babbitt metal lining according to a common plan for constructing these bearings, it would have melted and run out on the floor, but as it only contained narrow strips of Babbitt metal set in cast iron, it was kept in place.

Of course it was necessary to shut down at once, and as two floors above the saw mill were used for manufacturing purposes, many employees ceased working and wanted to know why the engine was stopped.

There are two things that tend to make an engineer show a bad temper. One of them is to be obliged to shut down on account of a hot box and the other and more exasperating one is to be expected to explain the details of the matter about a score of times to people who are at leisure, when the engineer wishes to repair the damage as soon as possible, consequently cannot spend time on explanations.

After taking off the cap and finding the shaft uninjured, I remembered my friend's advice about using Dixon's Graphite, and although I very much disliked to use such a black looking lubricant, I determined to give it a severe trial, then if it did not prove efficient no more of it would be allowed on the premises.

Procuring a piece of beef tallow, or suet, as it is sometimes called, I cut it into slices and completely covered them with Dixon's Graphite.

Placing them on the shaft they sputtered and sizzled like the contents of a frying pan on a stove, but the cap was soon replaced, and the engine started with a full load. In two hours time that bearing was as cool as if nothing had ever happened to heat it.

A point that should not be overlooked in this connection is that the fibre of the suet held the graphite against the shaft and prevented it from running off rapidly, thus requiring but a small amount of it to accomplish a great deal in eliminating friction.

Are you surprised to know that I consider the color of Dixon's Graphite perfectly satisfactory, when it will do such work as above described?

That engine was painted green, so that when the graphite worked out of the bearing the contrast in color was very great, but since then I have learned to paint my engine black, therefore when graphite is used the colors harmonize so nicely that you can scarcely tell where the graphite is located. It is always the best color for an engine.

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**DIRTY**,—clogged and neglected belts waste as much power as a badly-leaking steam pipe.

Dixon's Traction Belt Dressing restores neglected belts to full efficiency, or breaks in new belts by making them elastic and pliable.

---

**THE SLIPPING** of a belt is too often the symptom of an over-stretched and stiff condition.

Dixon's Traction Belt Dressing penetrates the innermost fibres and cures the cause of the trouble.



### INTELLECTUAL LIBERTY.

Robert G. Ingersoll: I do not know what inventions are in the brain of the future; I do not know what garments of glory may be woven for the world in the loom of the great ocean of discovery; I do not know what science will do for us. I do know that science did just take a handful of sand and make the telescope, and with it read the starry leaves of heaven; I know that science took the thunderbolts from the hands of Jupiter, and now the electric spark, freighted with thought and love, flashes under the waves of the sea; I know that science stole a tear from the cheek of unpaid labor, converted it into steam, and so created a giant that turns with tireless arms the countless wheels of toil; I know that science broke the chains from the human limbs and gave us instead the forces of nature for our slaves; I know that we have made the attraction of gravitation work for us; we have made the lightnings our messengers; we have taken advantage of fire and flames and wind and sea; these slaves have no backs to be whipped; they have no children to be stolen, no cradles to be violated. I know that science has given us better pictures and better books; I know it has given us better wives and better husbands, and more beautiful children. I know it has enriched a thousand-fold our lives; and for that reason I am in favor of intellectual liberty.

### INDISCREET SPEECH.

Why need a man deal in indiscreet words when they do no good? For instance: A southern college professor took to writing a magazine article on the welfare of the negro, and, among other things, said that "Booker Washington was the greatest man yet produced in the south after General Lee." Why does a man put things in this fashion? He gained no point; did no good; he gathered about his head the wrath of his readers. What is the use of sayings and doings that stir up strife when no principle is involved and no end reached?

Again within two or three days of each other, William Jennings Bryan was reported in the daily papers as having a quarrel with his daughter on account of her marriage to a man not at the moment well-to-do. The same day it was cabled from London that at a banquet table speech, he exalted character above wealth, above all other things, concluding that, above all other things, he desired to leave his children the precious legacy of a good name. Also the same day was recorded in the papers his loss of his case in the Bennett will case and his filing an appeal from the decision of the judge. Funny, isn't it, that fate should put all these indiscretions in his stew pot the same day!

He, Bryan, made the Bennett will; his wife typewrote it, the Bennett widow protested, took it to court; Bryan was beaten, the money denied him. Then he refuses, at the same time, to attend his daughter's wedding because she chooses to marry a—at the time—not well-to-do man and speaks at a public banquet of his contempt for money and his desire chiefly to bequeath to his heirs a legacy of character and good will.

Why does a man do all these indiscreet things at a time when all three ripen in the daily papers about the same week?—JOHN A. WALKER.

### YOUR DIET.

Oh, gentle reader, are you fully aware that even now you may be transgressing the simple laws of health, and laying the foundation of future discord and disease? Be warned in time, and be guided by the following instructions:

First—No meat! The gorilla, the strongest animal known, that lives in the depths of the African forest and snatches his prey bald-headed, eats no meat. Some of our best laundry work is done by Chinamen, and they eat no meat, preferring starch for their purpose. Meat is deadly. If persisted in, the pulse increases, and your strength, purely fictitious, will suddenly collapse. Meat is a man's worst enemy.

Second—No vegetables! It can be proven, nay, it has been proven, that vegetables contain a large percentage of starch, and what is more fatal to the human system than starch? Starch is death!

Third—No cream! Of all forms of food, cereals are no doubt the worst. The so-called health foods clog the system, and if persisted in, will cause premature decay. Almost all the Scotch dialect novels of the day were written under the influence of oatmeal. What more need we say?

Fourth—No fruit! The lion, noblest of beasts, so wondrous strong, eats no fruit, and gaze upon his grand physique. If ripe fruit is full of germs, how much more teeming with them it is when unripe.

No Shellfish!—Every oyster is said to contain three million microbes. Think of it, and pause before it is too late. Lobsters, as is well known, contain absolutely no fruit salts, so necessary to the human system.

No Water!—It thins the blood, makes you anæmic and multiplies the white corpuscles. Be warned in time!

In Conclusion—Should you feel the pangs of hunger curb them! They prove conclusively that your condition is abnormal, and, in the light of modern research, extremely unscientific.—*Life*.

### GRAPHITE FOR GALL SORES ON WORK-HORSES.

A correspondent calls our attention to the use of graphite for gall sores. He writes that he was raised on a farm and used various cures for such sores, but found that by pulverizing some of Dixon's Stove Polish and making a mixture of it, he had something in the way of a cure for which there was nothing equal.

This reminds us that many years ago, when we first began the manufacture of axle grease, we found that Dixon's Graphite Axle Grease was an unfailing remedy for any sores that might come on our horses. In fact, we use it quite largely in our stable as a horse ointment.

### TO THE POINT.

Enough Said.

Two Boston ladies strolling along a road just outside of the borough came upon the first mile stone. On it was written, "1 m. from Boston." Having never ventured so far from their native place before, they mistook the stone for a sepulchral monument. "How touching!" they exclaimed; "how simple! how human! 'I'm from Boston.' What more needed to be said?" So the dead speak.

—*Rochester Post-Express*.

### WHAT "CHAUFFEUR" MEANS.

The newest dictionary adds 17,000 hitherto unaccepted words to the English language, having culled this number from a list of 500,000 submitted for acceptance. Among the accepted ones are a number that owe their existence to the automobile and their insertion in the dictionary is an acknowledgment on the part of the dictionary compilers that the motor car has enriched our language. Most of the new automobile words are already in common use, but many of them are not yet given their correct application.

The word that has proved a particular stumbling block is "chauffeur," adopted from the French and meaning in the original "stoker." A "stoker" is defined in our dictionaries as "one who applies fuel to a furnace," and as this does not accurately represent the meaning of the word "chauffeur," the acceptance of "chauffeur" as a distinctive word has become imperative. Yet while "chauffeur" does not to us mean "stoker" it bears a close relation to "engineer," meaning a locomotive engineer, and is the title of that employed expert who operates automobiles. It is therefore inaccurate to refer to Mr. Wm. K. Vanderbilt, Governor-elect Herrick of Ohio, and Mayor Tom L. Johnson of Cleveland, for instance, as "chauffeurs." These gentlemen have the skill of "engineers," yet the work of "engineering" an automobile is not with them an employment but a mere pastime. The distinction is worth noting.

—*The Auto Era.*

### THE TRIALS AND TRIBULATIONS OF A BEGINNER.

W. M. Ellis in *Clay Record* says that the beginner in his trials and tribulations should have learned the advantage of a teachable spirit and the fact that those who have gone that way before him have much that they can and will impart to him. Two things I pray for oftenest: First, that whatever comes I may be kept sweet and brave, may never get the whining, envious, suspicious spirit that is worse than defeat. Second, that I may always be ready to learn from others,—may be saved from self-satisfied conceit with my own wisdom.

The boy going to school may not get his lessons, may not get much fun for the first few weeks, but he will get experience. You who go out with rod and fly may not always get fish, but between mosquitos and hunger, underbrush and sunburn, you get experience. Our beginner may count on wholesale experience as fast as he can take it in. Trials and tribulations will come before successes and profit. He will find at least a suggestion of why these old fellows who have stuck to the business for a score or two of years are gray, gritty and full of humor and philosophy and human sympathy.

WHAT THE tests of the late Prof. Thurston proved of the marvellous lubricating value of Dixon's Flake Graphite several years ago, has been abundantly corroborated by a succeeding host of other technical experts and practical engineers.

Because of the almost unlimited field of its usefulness, an accurate knowledge of its present applications cannot fail to be of importance to every technical man, indirectly interested in the question of reducing frictional resistance.

### THE CREDIT MAN'S SOLILOQUY.

To sell or not to sell?  
That is the question.  
Whether it is better to send the goods  
And take the risk of doubtful payment,  
Or to make sure of what is in possession,  
And, by declining, hold them.  
To sell; to ship; perchance to lose—  
Aye, there's the rub!  
For when the goods are gone,  
What charm can win them back  
From slippery debtors?  
Will bills be paid when due?  
Or will the time stretch out till crack of doom?  
What of assignments, what of relatives,  
What of uncles, aunts, and mother-in laws  
With claims for borrowed money?  
What of exemptions, bills of sale, and the compromise  
That coolly offers ten cents on the dollar;  
And of lawyers' fees  
That eat up even this poor pittance?  
Yet sell we must,  
And some we'll trust.  
We seek the just,  
For wealth we lust;  
By some we're cust;  
And stocks will rust;  
But we skip the worst,  
Or we'd surely bust.

—*British and Colonial Printer and Stationer.*



Maid (blushing): What kind of lead pencil is best for writing a love letter?

Mistress (practical): Soft.

*Courtesy of School Board Journal (Milwaukee).*

It is surprising how useful graphite is in the household. In the form of a very soft lead pencil it can be used to touch up the slides of drawers that are inclined to bind. Most of the spring rocking chairs persist in developing a squeak, and the squeak is usually subdued only by the spring being rubbed with graphite. If the threads of gas tips are rubbed with graphite, the tips can be put on and removed at any time without the use of a tool, and yet be perfectly tight.

### MARVELLOUS RESULTS.

**An Engineer Uses Graphite in an Emergency Case with Marvellous Results.**

A locomotive engineer writes us as follows:

"I have had such marvellous results from the use of Dixon's No. 635 Flake Graphite, that I wish to tell you how I use it and with what results:

"A few days ago I started on a 150 mile run with a small shifter of the four-wheel Mason type and, as engineers know, that is an engine with much weight on drivers.

"After a ten-mile run, all four drivers were afire, although I was one hour making the run. I was using common car oil packing. I stopped, took down dippers, and used Dixon's No. 635 Graphite and water in the dippers and made a suds of hot water, soap and graphite for the top of boxes and, at intervals of a few miles, poured that mixture through the oil holes.

"Drivers soon began to cool and I increased speed until nearly twenty-five per hour, or as fast as I dared run her.

"This engine of which I am writing was just out of the shop and when we arrived at the terminal, was cold.

"I also wish to state that I used the same mixture with good results on pins, but I find that Galena valve oil and flake graphite give best results on hard, long, fast runs on heavy freight and passenger engines."

### BOOKKEEPING WITH A LEAD PENCIL.

In the November issue of "GRAPHITE" we had an article with the above heading, which was quite interesting, and now we are in receipt of a letter from Dr. Marshall D. Ewell of Chicago, Ills., which he very kindly permits us to print. It is as follows:—

CHICAGO, ILLS., Dec. 21, 1903.

*Joseph Dixon Crucible Company,  
Jersey City, N. J.*

GENTLEMEN:—I have read with interest the article in November "GRAPHITE" concerning bookkeeping with a lead pencil. You have omitted from said article one of the very strongest reasons why merchants should keep their books with a lead pencil; namely, that lead pencil writing is much more permanent than any other known substance. A fire which will char the paper and destroy the ink will not have the slightest effect upon the graphite, so that so long as the sheets hold together, the writing can be made out. I have seen this exemplified in documents taken from safes that have gone through a fire.

Respectfully yours,

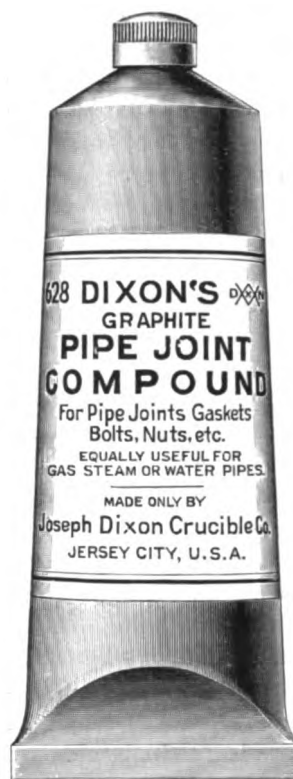
(Signed) M. D. EWELL.

### GRAPHITE SUGGESTIONS.

The Joseph Dixon Crucible Company, Jersey City, N. J., is constantly issuing new and attractive literature. Their latest, "Graphite Suggestions," is a neat booklet containing a great deal of information on a subject that is growing in importance every day as the possibilities of graphite become known. It is certainly wonderfully diverse in its applications and this latest publication contains a fund of information about it. The Dixon Company will gladly answer all inquiries.—*Stove and Hardware Reporter.*

### DIXON'S GRAPHITE PIPE-JOINT COMPOUND.

**A New and Convenient Package.**



The demand for a small and convenient size of Dixon's Graphite Pipe Compound suitable for pocket or kit, has warranted the Dixon Company in putting up a package in a quarter-pound collapsible tube.

Gas companies equip their men with these packages for use in house and office work,—in putting in gas meters, Wellsbach lights and regular gas fixtures.

The opening in the tube is quite small, so that the needed quantity for the pipe threads is exposed as wanted. The small quantity exposed is wiped on the threads, making unnecessary the use of any dauber. With such a package there is no need of soiling fingers or clothes.

The use of this package is not confined to gas companies. It is equally useful to the steam fitter and when it comes to the automobile it is almost indispensable, especially for the threads of the spark plugs.

### DIXON MAKES THE "MONARCH."

The following came to the Dixon Company from a town in Pennsylvania:

"Walking along the road about two months ago, I found a Dixon Monarch No. 2, S. M. pencil, and ever since I have been inquiring for the address of the Company that made the Monarch pencil, and just a few days ago I succeeded in getting your address and now I am very eager to try some of your assorted pencils. Worthless pencils can be purchased at any store, but a good one cannot.

"Please send me a few of your pencils and the price per gross, for as soon as I give them a trial, I intend to purchase. But if you do not desire to send them to me without having the money in advance, send me the bill, for money is no object for such a pencil as the Monarch pencil.

"Hoping to receive a few assorted pencils in a few days,  
I remain, \_\_\_\_\_"

IF ANYTHING will preserve a belt from the destructive action of chemicals, wet steam, or the spatter of water, it is Dixon's Traction Belt Dressing.

It thoroughly permeates the leather and preserves the vitality of every fibre, rendering the leather not only waterproof, but elastic and pliable.

Dixon's Belt Dressing is put up in paste form and also in one-pound solid bars. In winter time the paste is frequently heated and applied warm. This is more frequently done in wood-working mills or places where there is much dust and dirt.

Said the wagon maker to Mr. Joseph R. Hice, "I advise you to use the old axles in your new wagon, the spindles are so true, and in such fine condition."

Mr. Hice ran his Peddling Wagon through the State of Ohio for seven years, on an average of 3 pounds of Dixon's Everlasting Graphite Grease per year. His average has been 290 running days each year, and 22 miles each day, making a total of 44,660 miles.

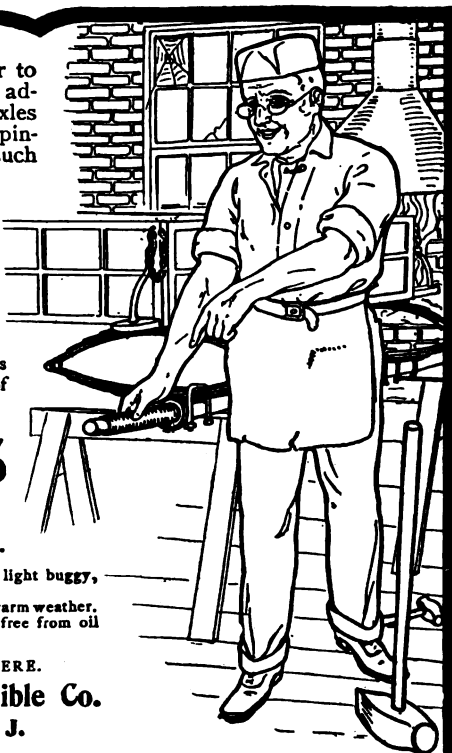
## DIXON'S

Graphite Axle Grease  
IS THE IDEAL LUBRICANT.

It is equally valuable for the light buggy, family carriage, and loaded team. Never gums, does not run in warm weather. Sponges and chamois always free from oil and grease.

FOR SALE EVERYWHERE.

Joseph Dixon Crucible Co.  
Jersey City, N. J.



### IN STONE CUTTING WE ARE BEHIND.

*Machinery* says it was originally intended that the columns for the Cathedral of St. John the Divine should be monoliths, and an immense lathe was designed for turning the great blocks of stone and converting them into cylindrical columns. The attempt, however, was a failure. One or more of the columns broke before being finished and it was finally decided to make the columns of two pieces each. The lower and larger piece in each case is 38 feet long and 6 feet in diameter and weighs upward of 90 tons.

Comparisons with other large monuments of the world show that Americans, with advanced methods and improved machinery, are still behind in stone working. Figures published by the *Philadelphia Record* show that the obelisk in Central Park, New York, is 69 feet high, seven by eight feet in cross section at the base, and weighs 220 tons. It was quarried more than 3,600 years ago, without the aid of any except the simplest mechanical devices. Largest of all the obelisks is the one at Rome which is 108 feet tall, 8 feet square at the base, and weighs 450 tons. At Karnak, Egypt, there is a great column which weighs 297 tons. It is 60 feet high and 11 feet in diameter. In Rome again, is Trajan's Stone, a stupendous column 127 feet 6 inches high. It weighs 300 tons. Cleopatra's Needle, in London, a companion to our obelisk, is 71 feet high and has a base of 7 feet, 7 inches. It weighs more than ours. In Alexandria is the famous Pompey's Pillar. It is 104 feet tall, and weighs 400 tons. We have much yet to learn from the so-called heathen.

Medford, Wis., Oct. 3, 1903.

I received your pencil and letter all O. K. It is the finest pencil I ever had so far, and I will always try to get your make if I can.

R. F. KIESSLING.

### THE LIVE MAN.

The Live Man iz like the little pig; he is weaned young, and begins tew root arly.

He iz the pepper-sass ov creation—the allspice ov the world.

One Live Man in a village is like a case ov itch in a district skool—he sets evry boddly scratching at onst.

A man who kan draw New Orleans molassis in the month ov January, thru a half inch augur hole, and sing "Home! Sweet Home!" while the molassis iz running may be strictly honest, but he ain't sudden enuff for this climate.

The Live Man iz az full ov bizness az the conductor ov a street kar—he iz often like a hornet, very bizzy, but about what, the Lord only knows.

He lights up like a cotton factory, and hain't got enny more time tew spare than a skoolboy has Saturday afternoons.

He is like a decoy duck, alwus above water, and lives at least eighteen months each year.

He is like a runaway hoss; he gits the whole ov the road.

He trots when he walks, and lies down at night only bekause everyboddly else duz.

The Live Man is not always a deep thinker; he jumps at conclusions, just as a frog duz, and don't alwus land at the spot he is looking at.

He is the Amerikan pet, a perfekt mystery tew foreigners; but he has done more (with charcoal) tew work out the greatness of this country than any other man in it.

He is jist as necessary as the grease on an axle-tree.

He don't die ritch, but alwus dies bizzy, and meets death a good deal az an oyster duz, without making enny fuss.

—JOSH BILLINGS.

### JOSEPH DIXON'S LATEST FAVOR.

The *Journal* acknowledges receipt of "Graphite Lubricants," as the latest product of the Joseph Dixon Company in advertising matter is entitled. "Graphite Lubricants" is one of the finest examples of the art preservative to reach this desk in many months and for effectiveness in telling the story of its subject, has that degree of conviction in its phrasing that denotes careful study and analysis. The half-tone illustrations with which the booklet is embellished are brilliant, clean and well executed, lending a finish that characterizes "Graphite Lubricants" as Dixon's *piece de resistance*.—*Pacific Lumber Trade Journal*.

### "ENGLISH AS SHE IS SPOKE."

In Italy, near Pompeii, the following curious announcement appears in the circulars of a large hotel:

"People will find equally thither a complete sortiment of stranger wines and of the kingdom, hot and cold baths, stables and coach houses, the whole with very moderate price. Now all the endeavors of the host will tend always to correspond with the tastes of their customers, which will acquire without doubt to him in that town the reputation of which he is desirous."—*Jersey City Evening Journal*.

## TO ELIMINATE BLUNDERING CONSULS.

*Editorial in New York Herald, Dec. 10, 1903.*

"Among the seven or eight hundred consular representatives of the several grades abroad are some who are clever and wise, and a great many who are—otherwise. While appointments are bestowed as political rewards, without regard to the fitness of the applicant, it must be impossible to secure a service adequate to safeguard and promote the business interest of the country.

"This matter has assumed increased importance in view of the present keen struggle among the nations for foreign markets and the special steps that our competitors are taking to improve their own consular services. The National Business League is trying to bring commercial sentiment to bear upon Congress for passage of the Lodge bill, or one embodying its chief features.

"The measure introduced by Senator Lodge during the extra session provides for preliminary examinations, consular representatives of six classes, with graded salaries and promotion on merit, and stipulates that no Consul General or Consul shall serve in a country wherein the United States exercises extra territorial jurisdiction until he has passed an examination in the principles of the common law, the rules of evidence and the trial of civil and criminal cases.

"With some such system many annoying international complications created by blundering Consuls would be prevented and the service would present a career to the ambitious, not a refuge for the incompetent."

All American manufacturers doing an export business have had more or less uncomfortable experience with the otherwise than wise American Consul. There have also been times when the American manufacturer has been obliged to resort to the British Consul and enlist his intelligent and forceful services.

Uncle Sam cannot too quickly do away with his "blundering Consuls," some of whom cannot tell an invoice from a bill of lading.

THE WESTERN UNION TELEGRAPH CO.,

District Superintendent's Office.

Seattle, Wash., Oct. 31, 1903.

Sample "Eterno" pencil received. Will say I find it an excellent pencil for manifold and general office use and a first class copier.

M. F. POWER, Audit Clerk.

Charlotte, N. C., October 3, 1903.

Accept thanks for sample of Dixon's "Eterno" copying pencil. Since writing have found that same was on sale here and find them to be perfectly satisfactory. As we have much copying to do, we will no doubt adopt these pencils.

F. D. LETHCO.

IN SPITE of the fact that some new form of stove polish is born every little while, Dixon's Carburet of Iron Stove Polish is still a strong favorite, as it was with our great-grandmothers seventy-five years ago.

## Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, type-writer work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing.**

**Dixon's Plumbago for Powder Glazing.**

**Dixon's Plumbago Foundry Facings.**

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite.**

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Cycle Chain Graphites**, for perfectly lubricating chains and gears of bicycles.

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Anti-Flux Brazing Graphite**, to prevent the spelter from adhering when brazing.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians.**

Special circulars with detailed information sent on request.



# Graphite

VOL. VI.

MARCH 1904.

No. 4.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

COPY FREE ON REQUEST.

COPYRIGHTED BY THE JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J., U. S. A.

## DIXON'S PAINTS AT THE NAVY YARD.

The paints used for protecting the structural steel of buildings in the U. S. Navy Yards, are selected by the civil engineers after analysis and careful consideration. The decisive point is the service rendered by the particular paint in its use on metal subjected to the same corrosive agencies as occur at the Navy Yard where the building is erected.

Two coats of Dixon's Silica-Graphite Paint (black and olive green shades)

## ST. LOUIS EXPOSITION.

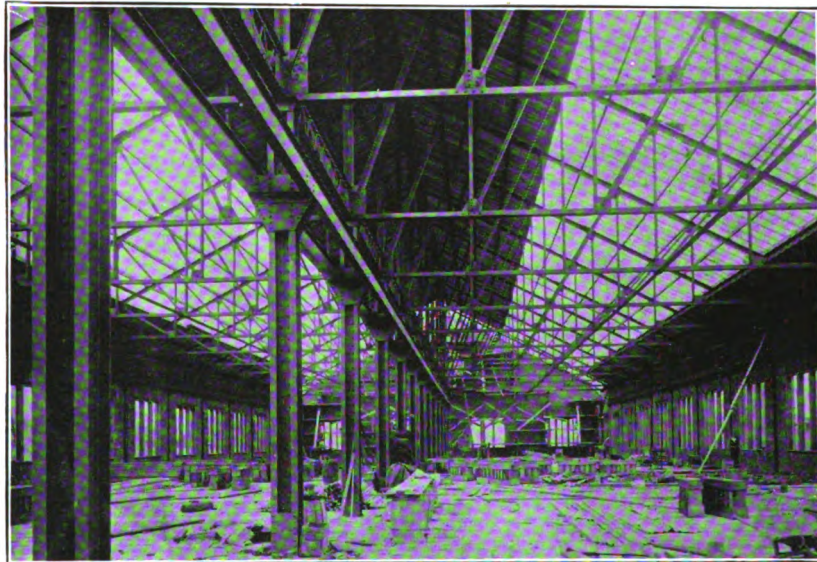
As we have had many inquiries as to whether we shall take part in the St. Louis Exposition, we want to say that we regret exceedingly that we shall not.

The business of the Dixon Company has been such that its entire force has been necessary in looking after details, and we have therefore been unable to give the matter of an exhibit the attention that any exhibit worthy of the name demands.

## DIXON'S DECEMBER NUMBER.

"GRAPHITE"—the Joseph Dixon Crucible Company's monthly publication—enters its sixth volume with the December number. Like previous issues that have reached

this desk, it is full of clever and well-selected paragraphs on the subject of graphite—a subject, by the way, that appears to furnish topics for discussion without number. While "GRAPHITE" is termed a house organ, its contents and general appearance place it on a footing with many of the trade journals of the country, and in many respects the little monthly volume furnishes much more instructive information



Third Floor, Building 127, U. S. Navy Yard, Brooklyn, N. Y.

were selected and used for all structural steel work of buildings No. 126, 127, 131, electric light tower on building 22, and float bridge, at the New York Navy Yard. The body, tenacity and elasticity of Dixon's Paints as used on steel work of the buildings referred to, proved highly satisfactory to the civil engineers.

The smooth nature of Dixon's flake graphite pigment and the fineness to which it is ground, insures ease of application and excellent covering power; two features that were favorably commented upon by the steel contractors in the application of this paint *during the winter season* at the New York Navy Yard.

We invite examination of the paint and the records of its service in different climates of the world.

Dixon's Traction Belt Dressing is a specific for overstrained, stiff, hard and glossy belts that slip.

than many periodicals of greater pretension but less usefulness. The Joseph Dixon Crucible Company works graphite into an endless variety of manufactured products, from lead pencils to the steel-saving liquids that defy the elements and rust. To know more of the products of the company and their usefulness, send to the company's office at Jersey City, N. J., for a sample copy of "GRAPHITE"—the house organ that's different.

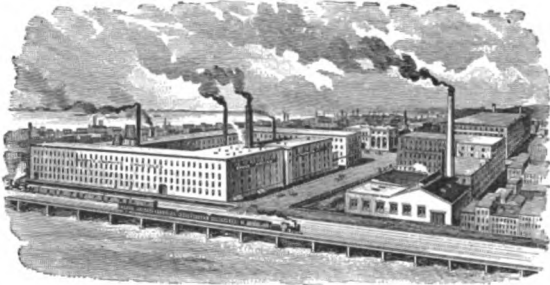
—*Railway and Engineering Review.*

It is not so much a man's willingness to work as it is ability to do something well, no matter what, that will secure him work.

ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J., U. S. A.

### BRANCHES AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Mogen (Switzerland), Finland, Havana.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
*President. Vice Pres. and Treas. Secretary.*

JERSEY CITY, N. J., March 1904.

### PAINT SPECIFICATIONS FOR STEEL AND IRON.

The specifications accompanying this article were prepared to meet the frequent requests of correspondents who were desirous of having Dixon's Silica-Graphite Paint properly used during the construction of steel and iron structures, and also for metal surfaces which required repainting.

The specifications are based on our experience of forty years as manufacturers of a protective paint, and with an intimate knowledge of the paint requirements of engineers, architects, owners and painters, and we present them to our readers for adoption with such changes as their judgment may suggest.

#### CONSTRUCTION WORK.

**AT THE MILL.**—Before painting, all surfaces must be thoroughly cleaned: freed from loose scale, dirt and moisture. The entire surface shall then be given a well-applied coating of Dixon's Silica-Graphite Paint, dark red. Parts to be in contact and enclosed shall receive, before assembling, a coat of the same material.

**AFTER ERECTION.**—Places damaged by abrasion shall first be retouched. The entire work shall then be given a second coat of Dixon's Silica-Graphite Paint, of a different color than the mill coat.

The top of the package to be removed and the paint properly stirred. No adulterating oils or thinners shall be used. The cleaning, painting and materials to be subject to inspection.

The paint to be furnished to the mill and building site in original packages, **READY MIXED** for use, as manufactured by the Joseph Dixon Crucible Co., Jersey City, U. S. A.

#### MAINTENANCE WORK.

**CLEANING.**—All broken or blistered paint, all rust, grease and dirt, must be removed by wire brushes, scrapers, blow torch, or by sand blasting with fine sand. The method to be selected and made part of the contract. Surfaces must be painted the day they are cleaned.

**REPAINTING.**—All surfaces shall be given two thorough coats of Dixon's Silica-Graphite Paint. The second coat to be applied only when the first is thoroughly dry, and to be of a different color. Surfaces must be perfectly dry when painted. The best round bristle brushes to be used.

The top of the package to be removed and the paint properly stirred. No adulterating oils or thinners shall be used. The cleaning, painting and materials to be subject to inspection.

The paint to be furnished in original packages, **READY MIXED** for use, as manufactured by the Joseph Dixon Crucible Co., Jersey City, U. S. A.

### HOW DO YOU FIGHT?

Did you tackle that trouble that came your way

With a resolute heart and cheerful?

Or hide your face from the light of day

With a craven soul and fearful?

Oh, a trouble's a ton, or a trouble's an ounce,

Or a trouble is what you make it,

And it isn't the fact that you're hurt that counts,

But only how did you take it.

You are beaten to earth? Well, well, what's that?

Come up with a smiling face—

It's nothing against you to fall down flat,

But to lie there—that's disgrace.

The harder you're thrown, why the higher you bounce:

Be proud of your blackened eye!

It isn't the fact that you're licked that counts,

It's how did you fight—and why?

And though you be done to the death, what then?

If you battled the best you could,

If you play your part in the world of men,

Why, The Critic will call it good.

Death comes with a crawl, or comes with a pounce,

And whether he's slow or spry,

It isn't the fact that you're dead that counts,

But only how did you die?—F. B. THURBER.

### BOOMING GRAPHITE PAINT.

It is very evident from this number of **GRAPHITE** that the Paint Department is up and stirring itself, and getting ready for spring painting.

The Paint Department of the Dixon Company is in able hands, and the several branches and the salesmen are contributing their best efforts for increased business, all of which is greatly appreciated by the company.





Bunker Brook Viaduct, 460 feet long, Bangor & Aroostook R. R.

THROUGH the courtesy of Mr. Moses Burpee, chief engineer Bangor & Aroostook Railroad, Houlton, Me., we present views of a deck girder bridge crossing the Fish River and the 460 ft. Bunker Brook viaduct of the Bangor & Aroostook Railroad, both structures having been erected by the Pennsylvania Steel Company, Steelton, Pa.

The Bangor & Aroostook Railroad are to be congratulated on their appreciation of the safety of life of the traveling

public in erecting all of their bridges on the most modern lines and of the highest grade of steel and masonry for strength and permanence.

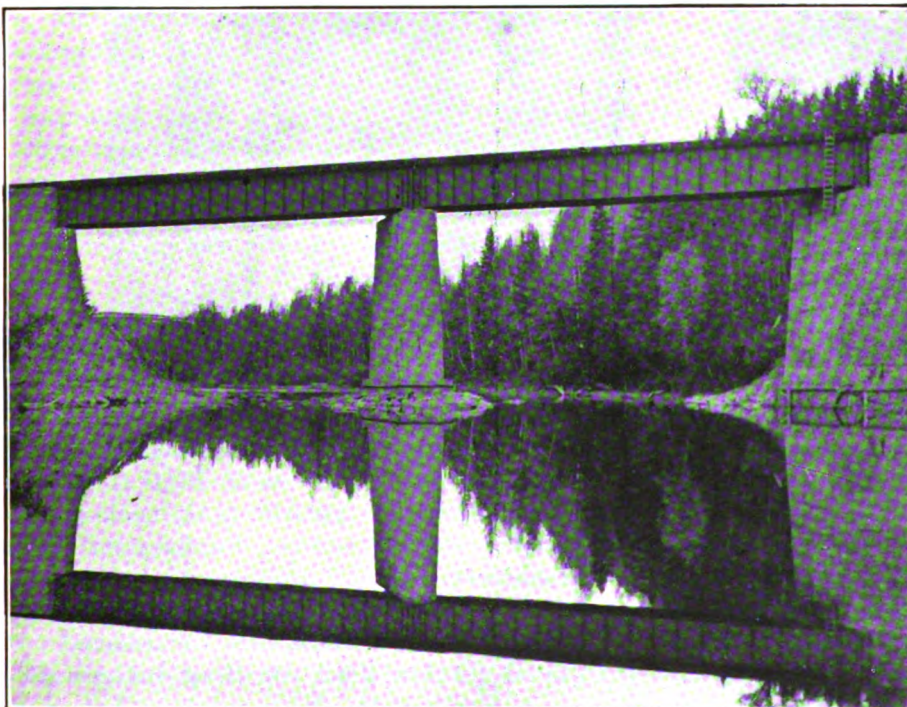
Dixon's Silica-Graphite Paint was used for the mill and erection coats of a number of the bridges of the Bangor & Aroostook, and is being used for maintenance of bridges already in the track.

#### SPECIAL PAINT REPRESENTATIVE.

Mr. J. W. Whitehead, Jr., favorably known for a number of years to the architects and engineers of Chicago and New York as an expert on protective coatings for structural steel work, has entered the service of the Joseph Dixon Crucible Company, as special representative for Dixon's Silica-Graphite Paint.

It is our purpose to furnish the architect, engineer, consumer and painter with reliable information as to the composition of protective coatings, the best paint to use for different classes of construction and to give, when desired, suggestions as to methods of application.

The representatives of the Dixon Company have a thorough knowledge of pigments, paint and painting, and their prompt attention to specifications to insure the proper use of Dixon's colors can be had by any one calling upon us for this service.



First Crossing, Fish River, Bangor & Aroostook R. R.





### THE NEW HOTEL ASTOR,

44th to 45th Street, Long Acre Square, New York City.

**Some of its Unique Features.—The Roof Construction.—Rooms for all Nations.**

As the time approaches for the opening of the Hotel Astor, the building becomes an object of renewed interest. Though only ten stories in height above ground, it will have more floor space than any other hotel in the city. Clinton & Russell were the architects, J. Hollis Wells was the engineer, John Downey was the general contractor, and J. B. & J. M. Cornell were the contractors for the 4,000 tons of structural steel work.

William Waldorf Astor has leased the property to William C. Muschenheim for something like \$400,000 a year. The estimated valuations are: for site, \$1,500,000; for building, \$3,500,000; for furnishing and special decoration, \$650,000. No other hotel in the city will contain so many distinctive features, so many beauties out of the ordinary.

The grill room in the main basement is taking the form of an Indian council chamber, as if it were in some place hollowed out of a mountain. The Old New York Room is properly next in order, with decorations depicting the town in colonial and later eras. The lobby on the Broadway side will be 22 ft. high and made rich with rare marbles and bronzes. From this one proceeds by a marble staircase to a spacious balcony, or mezzanine floor, having pretty Chinese, Japanese and East Indian nooks and cosy retreats, from which to look down into a Palm Room, 104x75 ft., occupying the western section of the ground floor. On the

44th st. side is a dining room for men in the style of the German Renaissance, ornamented with natural antlers and other spoils and memorials of the chase. A dainty dining room for women on the opposite side of the house, the 43d st. side, is in the style of Louis XIV., and the room for billiards will be like one in ancient Pompeii.

Seven stories will contain 600 rooms, all furnished in mahogany, together with 400 bathrooms. Then will come the banquet hall and the ball room, 2 stories in height, leaving spaces on the 44th st. side for a small auditorium, to be called "College Hall," besides a series of apartments having the effect of the cabin of a large yacht. A roof garden with a lawn, rose bushes and trees will make one think he is in some rural paradise instead of a crowded city.—*Record and Guide, New York.*

The 4,000 tons of structural steel of the new Hotel Astor are protected with Dixon's Silica-Graphite Paint; Dixon's Dark Red being used for priming coat, and Dixon's Olive Green for finishing coat.

Reference may also be made to the use of Dixon's Silica-Graphite Paint on steel work of the St. Regis Hotel and Apartments, 5th Avenue and 55th street, Algonquin Hotel, 45th street, Marie Antoinette Hotel, Broadway and 67th street, Knickerbocker Hotel, Broadway and 42nd street, New York City; Touraine Hotel, Clinton and Fulton streets, Hotel St. George addition, Clark street, Standish Arms Hotel, Columbia Heights, Brooklyn; Hotel Jefferson, St. Louis, Mo.; Belvedere Hotel, Baltimore, Md.; Lafayette Hotel, Buffalo, N. Y.

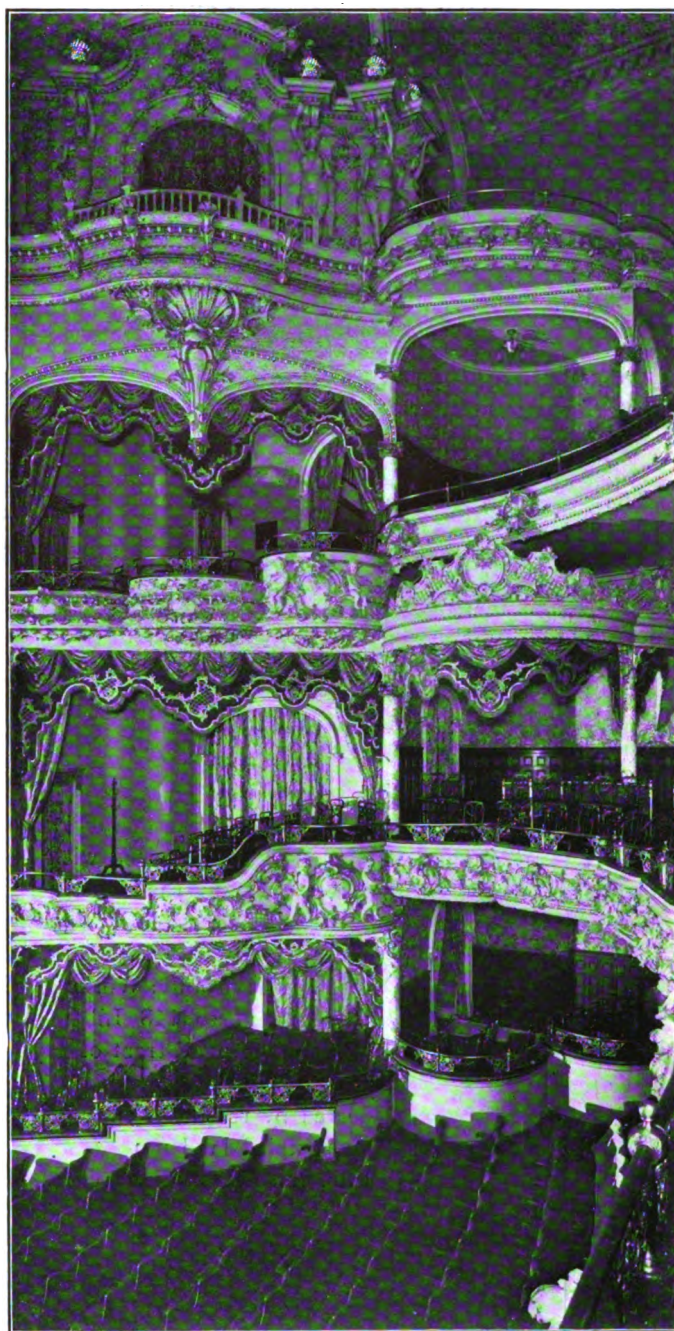




**KEITH'S NEW THEATRE, Chestnut St., Philadelphia.**

*The Perfect Theatre* in point of safety and elegance in the judgment of building experts and of the public. Standing in the foremost rank of the grandest theatres in the world, Mr. B. F. Keith's new play-house is as truly one of the sights of Philadelphia as the Betsey Ross House and Independence Hall. The beauty and completeness of Keith's new theatre should be seen to be appreciated.

The beautiful paintings that adorn the lobby and the dome of the auditorium, the artistic decorations, rare bric-a-brac, costly vases and rich carpetings, have been pronounced by critics to be of the highest design and quality.



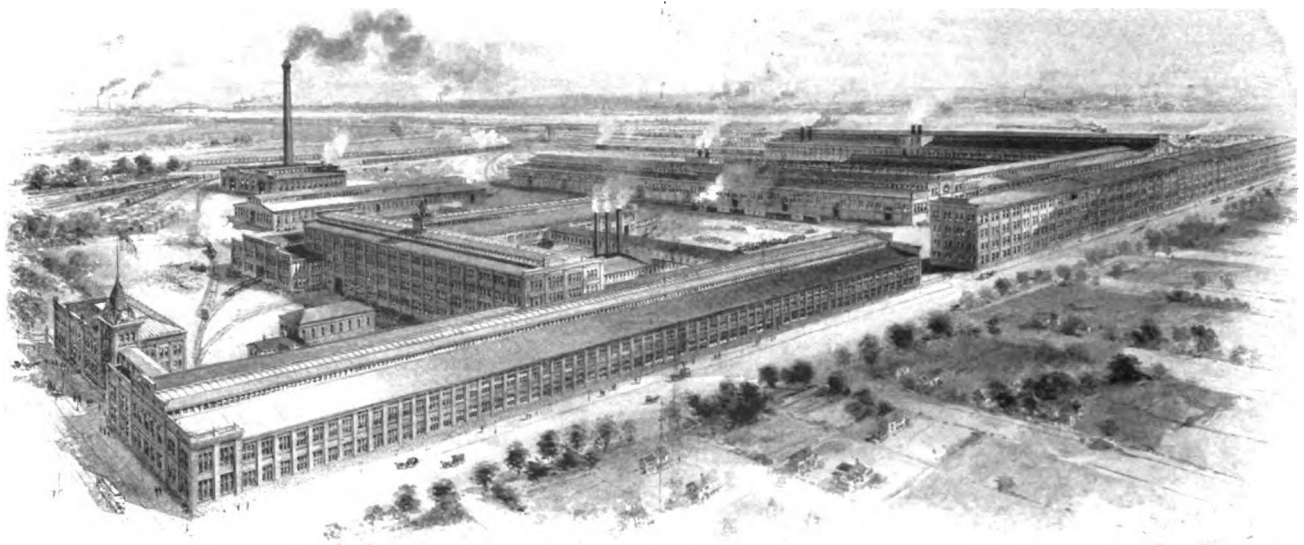
**Boxes and Loges—Keith's.**

A sumptuously appointed Green Room is at the disposal of the performers and their friends. The heating and ventilating system is the most perfect in any building in the country, and provides for hot and cold air according to the season, as Keith's Vaudeville Theatre is open every week day of the year.

Architect Albert E. Westover, of Keith's Theatre Building, Philadelphia, has designed many of America's best theatres and interiors. Experts were recently appointed to inspect Keith's as to its safety against fire and arrangement for egress of patrons and performers, and their report on the perfect fireproof arrangements was highly creditable to Mr. Westover's plans.

In the selection of the best of everything in the construction line, Dixon's Silica-Graphite Paint was used for all structural steel and ornamental iron work of Keith's \$1,000,000 Chestnut Street Theatre.





Henry R. Worthington Hydraulic Works, of the International Steam Pump Co.  
Bert L. Baldwin, Engineer, New York City.

Passengers on trains to New York, via the Pennsylvania; D. L. & W. R. R., and Erie R. R., have observed with considerable interest during the past year, the construction work of a great plant being built at Harrison, N. J., about eight miles from New York and one mile from Newark. It is the new Henry R. Worthington Hydraulic Works of the International Steam Pump Co., 114 to 118 Liberty st., New York City, and occupies a trapezoidal tract of ground of about 30 acres.

Harrison, N. J., was selected by reason of the property being the largest tract of unoccupied land near New York that was well above high tide, and also in direct communi-

cation with three railroads, the Pennsylvania; the D. L. & W. and the Erie.

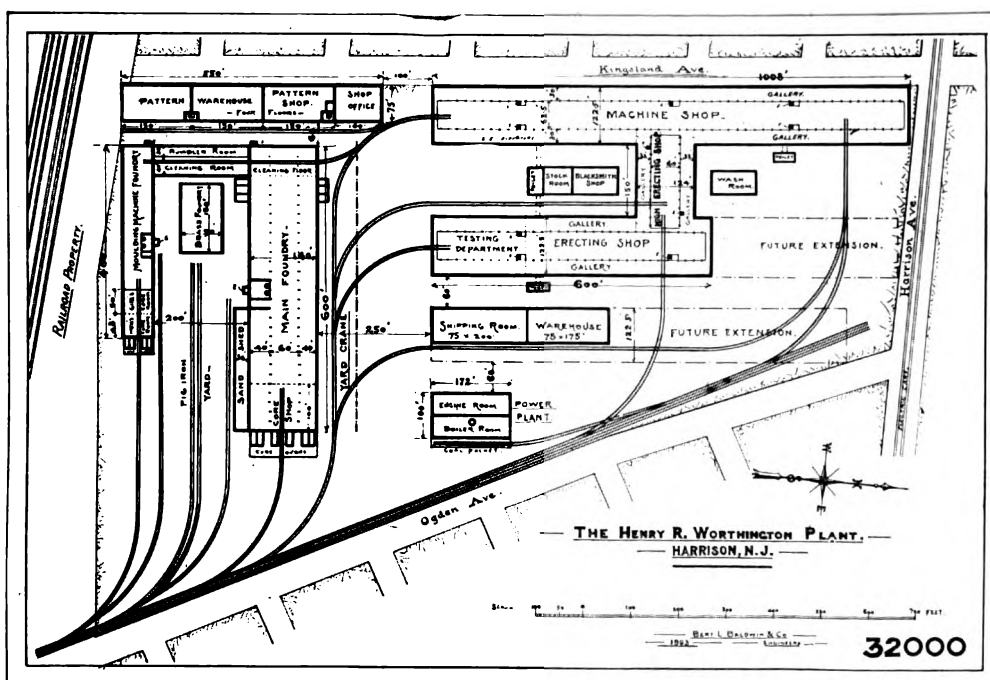
The new plant was designed and erected under the personal supervision of Mr. Bert L. Baldwin, M. E., and most creditable to his ability as engineer and architect is the economic arrangement of the buildings, inter-shop handling of materials, system of railroad tracks, and the special features of construction and equipment to be found in every building. Between four and five thousand men will be given steady employment at this plant, which will have cost over \$2,000,000.

The general view, ground plan, steel framework of machine shop and steel frame work of high erecting shop, that we illustrate, give an excellent idea of the size of the world's largest steam pump manufacturing plant.

The buildings are divided into two groups. One group comprises the pattern shop and foundries; the other contains the machine and erection shops and the warehouses.

A system of yard tracks connects these buildings in groups and individually with each other and with the railway. All handling of work within the buildings is accomplished by cranes, and for the transportation from one building to another the yard tracks are employed.

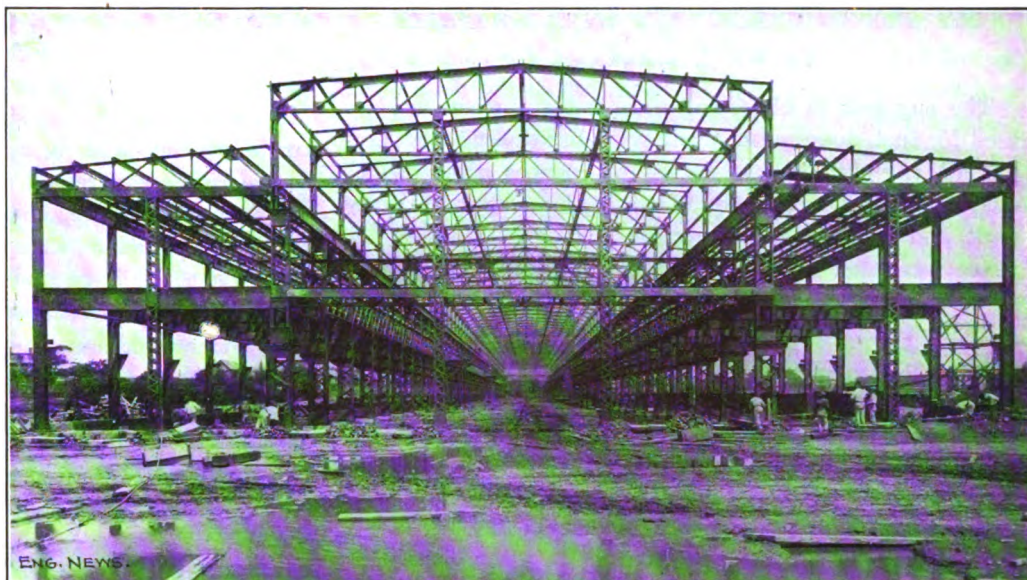
The main machine shop is 1006



Ground Plan of the Henry R. Worthington Hydraulic Works.

feet by 121 feet 5 inches, with a ground floor area of 117,500 square feet, and galleries 56,500, a total of 174,000 square feet, and the erection shop, 592 feet long by 121 feet, with 99,700 square feet. The main erection shop, 210 feet long, with four galleries one above the other in the side bays, connecting the two shops, with 63,800 square feet. The main foundry is 600 feet long by 140 feet, with special foundry for small work, 410 feet long with a building connecting the two, 200x60 feet, to be used for cleaning castings. The pattern building is four stories high, and 550 feet long. It is divided by fire walls into four sections. The north section will be used for offices and draughting rooms, the adjoining section for the pattern shop, and the balance of the structure for pattern storage. The brass foundry is 92x150; the foundry for small castings, 300x65; the shipping room, 74x200; the warehouse, 75x175; the power house, 175x102, and will be equipped with the most modern boilers, engines and generators. Electric power distribution is to be employed throughout, and the grounds will be lighted by arc lights.

V. J. Hedden & Sons Co., New York City, were the general contractors for the plant, and the structural steel was supplied and erected by the American Bridge Company of New York City.



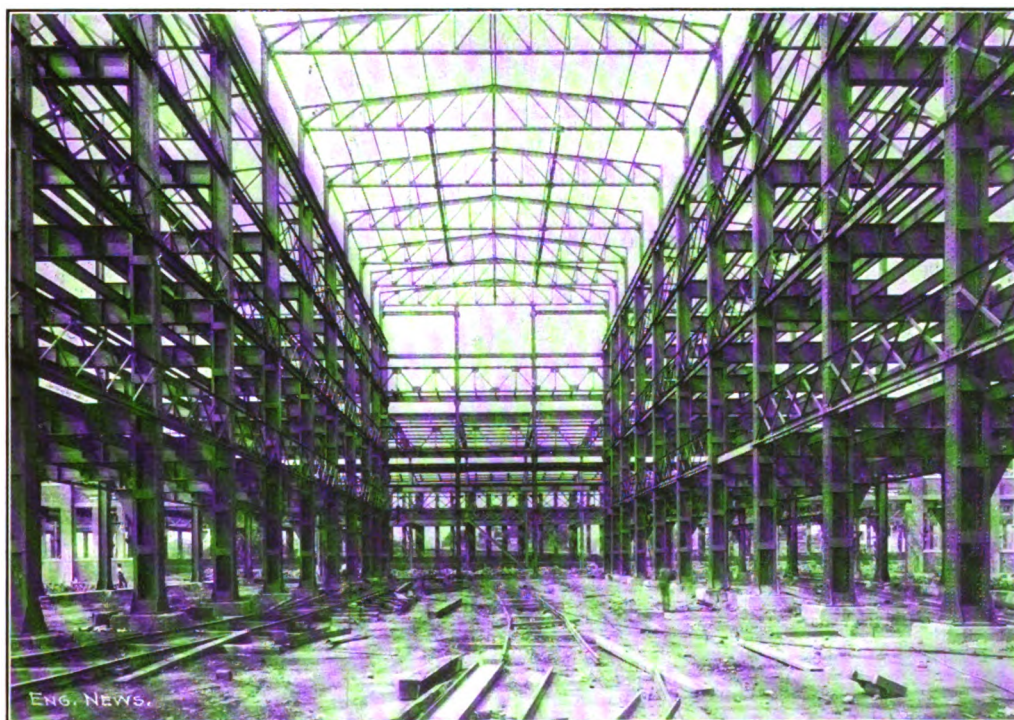
Steel Frame Work of Machine Shop of the Henry R. Worthington Hydraulic Works.

Dixon's Silica-Graphite Paint, Natural Color, was used for protecting all structural steel, and two coats of lead and zinc (tinted) were applied over the Graphite Paint during the construction, to secure a light effect.

#### THE TASK.

To be honest, to be kind, to earn a little, and to spend a little less; to make upon the whole a family happier by his presence; to renounce when that shall be necessary, and not be embittered; to keep a few friends, and these without capitulation. Above all, on the same grim condition, to keep friends with himself. Here is a task for all that a man has of fortitude and delicacy.

—ROBERT LOUIS STEVENSON.



Steel Frame Work of High Erecting Shop of the Henry R. Worthington Hydraulic Works.

Rejoice, and men will seek  
you;  
Grieve, and they turn and go.  
They want full measure of  
all your pleasure,  
But they do not want your  
woe.  
Be glad and your friends  
are many;  
Be sad and you lose them all.  
There are many to drink  
your nectared wine,  
But alone you must drink  
life's gall.



## MY SECOND EXPERIENCE WITH GRAPHITE.

By W. H. WAKEMAN.

The engineer in charge of a small plant where coal is used for fuel, does not always have due respect for a planing mill engineer because his engine room is often full of dust and he is frequently found hard at work in some dark and disagreeable corner, on a machine that either never was fitted for the service required, or else has been about ruined by hard usage and neglect.

While I have no desire to belittle the man who is doing everything required of him in a small plant, yet it is proper to state that the planing mill engineer in some cases has more real hard, perplexing work to do in one day, than the other has in a week.

All kinds of schemes must be devised and executed in order to keep the machinery in operation and fill orders on time; I speak from experience along these lines. My reason for resigning the position was that after due consideration, I concluded that a short life full of excitement would not answer my purpose so well as one in which the same amount of work and calculation is spread over about three times as much time, making the lifetime longer accordingly.

While in charge of the engines, boilers and machinery in this plant, my second experience with graphite was secured, and this will be related as a matter of interest.

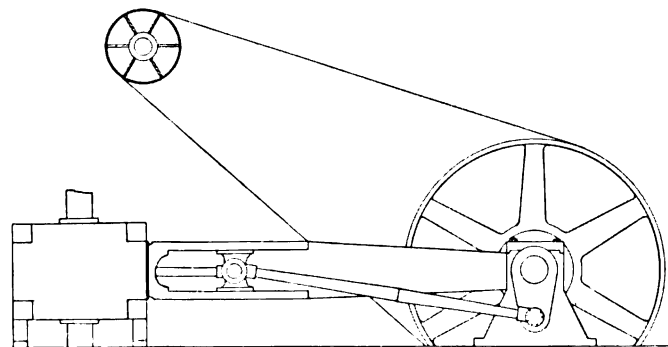


Fig. 1.

In order to fully understand the situation, the location of engine and main shaft will be described. Fig. 1 shows the engine, which was a noble specimen of the Corliss type. It runs "over" and the main belt rises at an angle of about 45 degrees to the main pulley. This will at once show the reader that much of the double leather belt, 20 inches wide, is supported by the main pulley. While this gives it a good grip on the smaller pulley it also brings a heavy stress on the shaft, which is  $4\frac{1}{2}$  inches in diameter.

This was not supported by hangers, but by rigid boxes suitably supported. The box next to the main pulley was 20 inches long, made of bronze without Babbitt metal lining. The cap contained a long, wide slot in which thick grease was packed for lubricating the bearing.

There was no good reason why this arrangement should not work well, and the fact that it did not must be charged against the writer. In order to balance the account, however, it is necessary to give proper credit for overworked days, including Sundays, and nights in which more time was spent in doing repair work on engine, piping, boilers,

shafting and machinery, than in much needed rest. The natural consequence of this was that something must be postponed and so long as the main bearing was well supplied with grease which showed no inclination to melt and run down onto the shaft, there appeared to be no reason for removing the grease.

There came a time, however, when this heavy grease became dry from long exposure, so that much heat was required to make it do the work for which it was placed in the box, and this caused serious trouble.

It was not practical to feel of this box, while the machinery was in motion, because it was supported by a partition wall, with the main pulley close to it on one side, and another almost as large on the other side.

One day while looking at this bronze box it was suddenly enveloped in flames, for it must be remembered that in a planing mill everything is covered with light dust and shavings which easily take fire.

The fire was quickly carried to the main pulley, thence following the main belt as it swiftly moved in its place, and in a few seconds the fly-wheel looked like a gigantic pinwheel on Fourth of July night.

Steam was shut off as quickly as possible, but the mill was on fire and an alarm was turned in without delay, bringing the fire department to the scene in a very few minutes. A hole was chopped in the roof, lines of hose were rapidly laid, streams of water soon played upon the flames, also upon the engine and other machinery, putting out the fire, but leaving the place in a wretched condition.

After the excitement had subsided, the owner stated in a businesslike manner, that I could have all the help wanted, but the mill must surely start up on time the next morning.

I assured him that his wishes in the matter would be given due consideration, and that the mill would run as usual on the next day. As I failed to state what help I wanted, he waited a few moments, then inquired if I wanted machinists to come from a neighboring machine shop to put the bearing in order, &c. He was told that no help was wanted except the services of laborers to clean up the place. He made no further comment and asked no more questions, but left the matter entirely in my hands, consequently it made me feel under double obligations to start the machinery on time.

This is mentioned because it shows that this steam user adopted a proper method in this case at least, for he placed an engineer in charge of his machinery, then did not interfere with the details of its management, even when much was at stake.

The owner expected that it would be necessary to remove the main belt, jack up the main shaft, remove one of the pulleys and take out the box, but nothing was disturbed. This would have been a hard job for as many men as could work on it, requiring the whole night for its completion.

The only precaution that I took was to secure a good supply of Dixon's Graphite and plenty of tallow, after which I enjoyed a good rest that night, instead of working as I might have done.

An ordinary water pail (which is usually called a fire pail), was nearly filled with tallow, and all of the graphite

that it would absorb was mixed with it. The large slot in the bronze box which supported the main shaft was packed full with the mixture and the engine started at the usual time.

The slot full of lubricant disappeared in a few minutes but was caught in another pail and replaced by more as fast as wanted. The box heated badly, causing the graphite to flow out quickly, taking the full time of one man to replace, and for awhile the issue was in doubt, but after about three hours of lively work, the bearing began to cool and by noon it was only warm. At night it was in normal condition, and gave no further trouble.

Ever since this incident (or accident) occurred, I have considered the action taken in the matter one of the best tests of the lubricating qualities of graphite. The position of fly-wheel, belt and main shaft is illustrated in order to show the reader that the bearing was carrying a heavy load, and as the surfaces were badly cut by the excessive friction which caused the fire, no ordinary lubricant would have enabled me to run that day, without even a trial at slow speed and light load.

It required implicit confidence on my part, in Dixon's Graphite, to take the course described, but said confidence was not misplaced.

#### FROM MANUFACTURERS IN NEW JERSEY.

Quoting from the address of Archer Brown, of Rogers, Brown & Co., on "Booms and Reactions in Iron," in *The Iron Age* of December 17th, in the paper read before the New England Foundry Association, the last four or five lines of his argument seem to us to state the case: "Real wealth increased, credit not unduly extended, confidence not broken, energy of the people undiminished and finances sound." He points out also that we are not in the same shape as in 1873 or 1893. The crops of the country during this last year will sell for \$5,000,000,000, and for the last five years, five times five, or \$25,000,000,000. They have all been disposed of at good prices. This has made, as Mr. Brown says, a real increase of wealth, and enabled people everywhere who wanted to pay their debts and so diminish the credits. As banquet speaker said, the pause is psychological, not logical. The little pause that has taken place just now is more due to the behavior of labor than anything else. This, plus the overcapitalization of such a company as the steel company. The conclusions we draw are, that there may be some further pause, but not a serious one; that the rank and file of the people everywhere will have money to spend and will spend it.

—JOHN A. WALKER in *Iron Age*.

COMPARE YOUR indicated horse power with the effective horse power and note the loss in friction both before and after applying Dixon's Flake Graphite.

In a certain case, a saving in horse power of 13% with one-quarter the former oil supply was effected and continued.

Cylinder and valve troubles, packing troubles, hot pin and journal troubles, and many overtime repairs disappear when Dixon's Graphite is used regularly.

#### CHICAGO CATASTROPHE.

The immediate members of the Dixon staff at the Chicago office and their close friends were fortunate enough to suffer no loss in the terrible theatre fire wherein so many lives were sacrificed.

As soon as the news of the terrible theatre fire was flashed over the wires to the eastern papers, our Vice-President and General Manager, Mr. John A. Walker, wrote our Chicago office expressing sympathy of the Dixon Company to Chicago in her terrible calamity, and received the following from Mr. Dudley Johnson, of the Chicago office.

"Chicago, Jan. 2, 1904.

"Dear Mr. Walker:—

"We have yours expressing the sympathy of the Dixon Company for Chicago's frightful calamity, for which please accept our thanks.

"Concerning our immediate selves, we are happy to say that there were no immediate relatives or very close friends of the people in our office here who were caught in the theatre fire. There were a number of very narrow escapes: one of the boys in the office here says that his mother had tickets for the matinee that afternoon, but something prevented her going. One of my very close friends sent his little boy, age ten, down with a party of friends to attend "Mr. Bluebeard" matinee, but owing to the crowded condition they went elsewhere. Several of the writer's acquaintances were either burned up or missing, but no close friends.

Yours truly,  
(Signed) "DUD."

#### "THE NEW EPOCH."

This is the title of a new book by the late George S. Morrison, who was one of the most notable bridge engineers of his time.

The New Epoch in his idea is that developed by the manufacturer of power. He says, page 39: "The profits of the New Epoch must be made not by buying cheap and selling dear, but by reducing the cost of production." He says further: "The business of the New Epoch will be manufacturing and banking, rather than trading."

Everybody lives where there is a circulating library. We recommend all hands, including every Dixon man, to get this book and read it.—JOHN A. WALKER.

#### AS GOOD AS HE COULD.

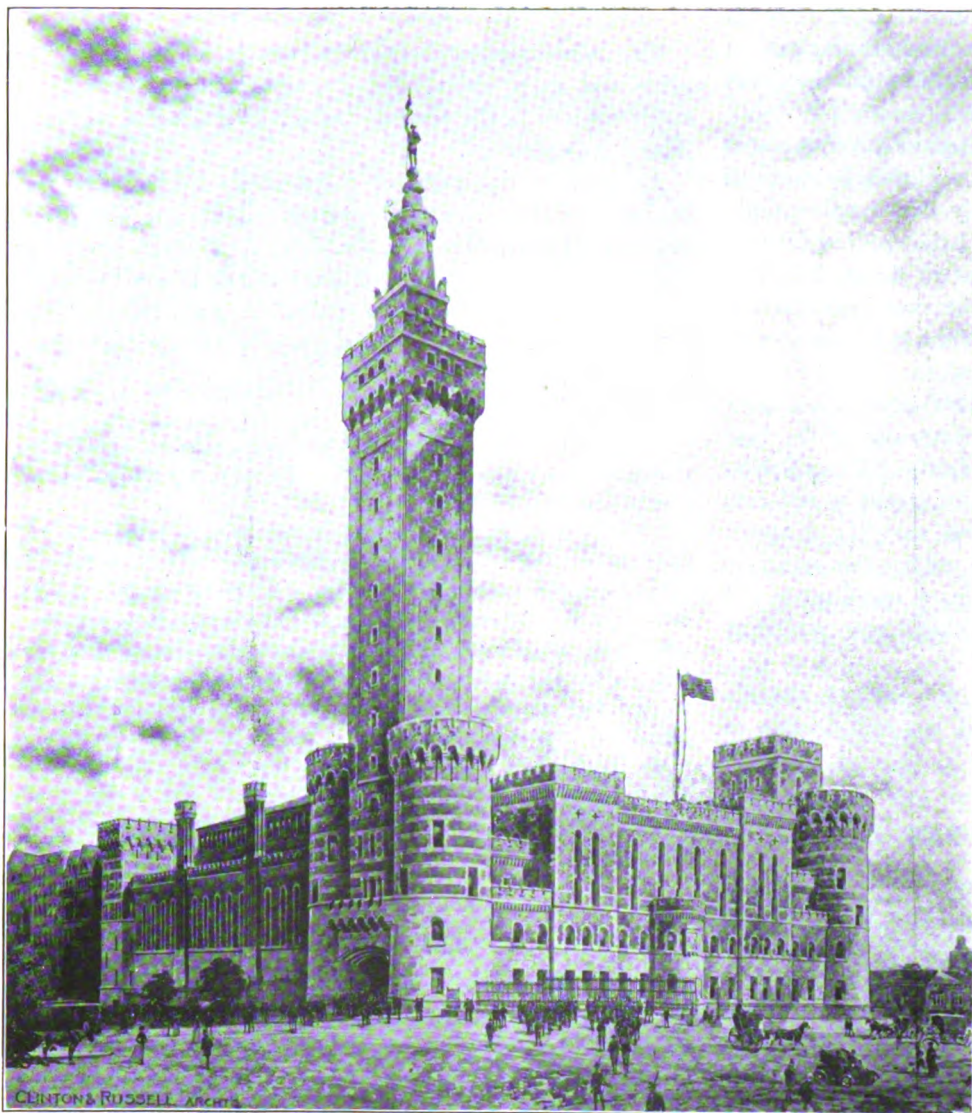
One of our people reporting on a job temporarily not successfully done and he hoped he would be excused as he did the best he could.

We replied—No—his task was to do it—to succeed—to get what he went for. If a good thing can be done—the man in question must do it, or sooner or later let some one try who can do it.—JOHN A. WALKER.

#### SUPPLY AND DEMAND.

A rich man sat him down one night to dine;  
Rare was his food, superb was his priceless wine,  
A poor man, hungry, lurked without the gate,  
And craved a crumb from off the rich man's plate.  
Yet neither rich nor poor man ate that night;  
One had no food, one had no appetite.

—Sam S. Stinson, in *Lippincott's*.



### THE NEW SEVENTY-FIRST REGIMENT ARMORY.

Clinton & Russell, Architects.

Our readers will remember the destruction of the 71st Regiment Armory, New York City, on the night of Feb. 21, 1902, by fire, the cause of which was never ascertained. On the old site, at the corner of 34th street and Park avenue, a new building is being erected.

Lieut. Colonel J. Hollis Wells has been the leading spirit in the promotion of this armory plan. His intimate knowledge of the requirements of the regiment, in connection with his being a member of the firm of Clinton and Russell, the architects who have prepared the plans, has made it possible to produce most excellent results. Careful planning was required, as the offices of the General of the Brigade and quarters for the Signal Corps had to be provided, as well as the regular regimental quarters.

The general style of the exterior, which might be called Baronial, is in accordance with the familiar types of armory architecture in New York City, only more elaborate. Bastion-like towers on the corners emphasize the style, and the main signal tower, which rears into the air 236 ft., is a very striking feature. The bronze color-bearer surmounting this will be as much of a landmark as the Diana of the Garden.

The drill hall floor is 189 ft. wide and 208 ft. long, with galleries having a seating capacity of 2,650, or about twice that of the old building.

On the Park Avenue side are the Brigadier-Generals' quarters for the officers of the regiment, as well as the board rooms, etc. The second floor on the Park Avenue side contains a suite of rooms for the use of veterans and quarters for the officers. The third floor is given over mainly to the Signal Corps, with a large lecture room 40x60 ft., and instrument rooms.

The signal officers' quarters and the medical department are also on this floor. The fourth floor contains the Signal Corps' drill hall, 35x105 ft., with two steel ceilings for raising poles, etc. The Signal Service uses the towers on the 34th street side for class-rooms. There is one very high room for pole climbing drill. The high square tower is also devoted to the use of the Signal Corps, as it will be possible to signal many distant points from its top. The towers on the 33rd street side will be used for quarters for the band.

The bid of the Fleischman Realty & Construction Co. for the erection of the armory came within the appropriation of \$650,000, a notable occurrence in the history of municipal buildings in New York City.

The structural steel is being supplied by the Hinkle Iron Co. of New York, and Architects Clinton & Russell have selected Dixon's Silica-Graphite Paint, Dark Red, for priming coat and Olive Green for erection coat, to be used on all structural steel and ornamental iron work of the 71st Regiment Armory.

Our space will not allow of a full description of the excellent arrangements of the many rooms devoted to the work and pleasure of the regiment, but a full description, with the floor plans, can be had in the November issue of the *Architects' & Builders' Magazine*, to whom we are indebted for the cut of the armory and this descriptive matter.

THE MAN who puts a steam, gas, or water pipe together with Dixon's Graphite Pipe Joint Compound enjoys a degree of satisfaction not experienced when any other material is used. He knows to a certainty that the joint he has made will be perfectly tight, and he also knows that whenever it is required the joint can be taken apart with consummate ease.—*Marine Journal*.





Wilmington Malleable Iron Company's Plant, South Wilmington, Del.

The illustration shows a bird's-eye view during construction of the extensive plant of the Wilmington Malleable Iron Co., at South Wilmington, Del. We are indebted for the excellent photograph to Mr. S. Fischer Miller, vice president of the Tidewater Building Co., of New York City, engineers and general contractors for all buildings of this modern malleable iron plant.

Covering a tract of 42 acres, the buildings consist of a foundry, 450 x 216 feet; annealing room, 210 x 420 feet; pattern safe, 83 x 56 feet; carpenter and machine shop, 100 x 77 feet, two stories high, the upper story of which is the pattern shop loft; office building, 45 x 55 feet; engine room, 40 x 75 feet; and boiler room, 60 x 50 feet. The foundry and annealing rooms are heated by hot air, and all the other buildings by hot water. Electric power is used throughout the entire plant.

The buildings are all brick with concrete slab roofs, and all doors and windows and casings copper-sheathed. Three thousand tons of structural steel work were used in the different buildings. The plant has an annual capacity of about 12,000 tons, and being in direct communication with the Pennsylvania R. R., the Baltimore & Ohio R. R. and the Philadelphia & Reading R. R., is particularly well equipped for the rapid filling of orders.

The plant was designed by Mr. S. E. Hopkins, civil and mechanical engineer, Naugatuck, Conn. The Tidewater Building Company, of New York City, were the general contractors, and the rapidity with which the buildings were erected and the high grade materials of each class that were used, secured the favorable notice of the officials of the Wilmington Malleable Iron Company.

Particular attention was given to the selection and use of protective paint for the steel work, and Dixon's Silica-Graphite Paint was used for priming and field coats after analysis of the paint and investigation of records as to its protective and wearing qualities. For light effect, a coat of lead and zinc paint (tinted) was applied over Dixon's colors.

A PROPERLY run belt should not be tight, either for its own good, or for the good of the shaft, bearings and journals.

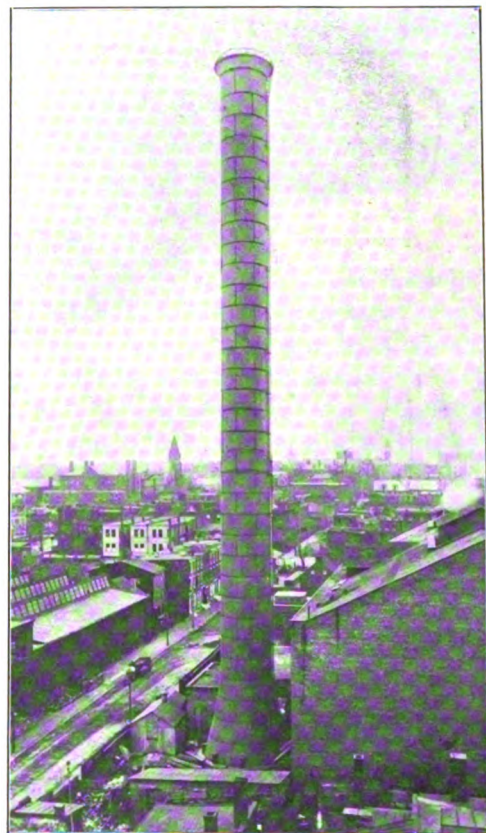
A belt too tight loses its flexibility. When properly dressed with Dixon's Traction Belt Dressing, it retains its flexibility and gives the necessary adhesion.

DIRTY,—clogged and neglected belts waste as much power as a badly-leaking steam pipe.

#### PHILADELPHIA RAPID TRANSIT STACK.

The most conspicuous part of a power or manufacturing plant being the smoke-stack, it is important that it present a well-kept appearance. To preserve and beautify stacks, a paint must be used which will not be quickly destroyed by the action of a high degree of heat in combination with exposure to varying atmospheric conditions.

The height and heat of smoke-stacks render the painting difficult and dangerous, and the expense and annoyance of frequent repainting should be avoided by the use of a



paint that will withstand the severe conditions for the longest time.

Dixon's Silica-Graphite Paint (black) is specially prepared for stack protection, and is extensively used in the manufacturing districts of Philadelphia.

Dixon's Silica-Graphite Paint has given a service of five years on the steel stack of the Philadelphia Rapid Transit power plant, West Philadelphia. We can undoubtedly give local reference as to the durability of this paint in different climates.





### **HOTEL BELVEDERE, BALTIMORE, MD.**

Parker & Thomas, Architects, Baltimore and Boston.—Wells Bros. & Co., Contractors, Baltimore, New York, Philadelphia, Chicago.

*Belvedere, The Beautiful.* Baltimoreans are justly proud of the palatial Belvedere Hotel on Charles street, which was recently opened for public inspection and occupancy.

Architecturally the new hotel will be famous for its rich refinement in ornamentation. Most excellent is the arrangement of the 350 private rooms. The decorations and furnishings of the public and private rooms are particularly impressive in their design and grandeur. This grand temple of usefulness is an admirable example of the progressive South, and was designed by Parker & Thomas, architects.

Wells Brothers & Co., general contractors for the Belvedere, furnish us the following construction details. The ground area of the structure is 185x100 feet. The structure is 218 feet from the foundation level to roof, and contains 2,400 tons of structural steel. The eight girders over the main dining room weigh 14 tons each; the mansard is taken up by the ballroom, 60x100 feet, and the banquet hall, 40x80 feet, with the stage.

Wells Brothers & Co., the builders, are favorably known

in the large cities for the speed with which they erect modern high buildings, and for the completeness of their system in carrying out architectural detail by the use of the highest class of material, in the hands of the most skilled mechanics.

An important feature of the construction of the towering steel skeleton frame work was the selection of the material to be used for its preservation.

The protective qualities and ease of application of Dixon's Silica-Graphite Paint secured its selection and use by the architects and builders of the Belvedere for all the structural steel work.

Dixon's Silica-Graphite Paint was the first graphite paint made, and has always been first in quality, covering power and durability. Dixon's Flake Graphite and Silica are inert, and as paint pigments form with oil a tenacious, elastic coating. Dixon's Flake Graphite is a lubricant, and this lubricating property insures thorough application, as well as saving labor and brushes.

# Graphite

VOL. VII.

APRIL 1904.

No. 5.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

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## THE BOSTON BOY AND THE CIN- CINNATI JUDGE.

A nice little boy, reared in the intellectual and heterodox atmosphere of Boston, happened to be a witness in a case in Cincinnati, and the question arose as to his being old enough to understand the nature of an oath, so the judge investigated him.

"Well, Wendall," he said kindly, "do you know where bad little boys will go when they die?"

"No, sir," replied the boy with confidence.

"Goodness gracious!" exclaimed the judge, in shocked surprise, "don't you know they will go to hell?"

"No, sir. Do you?"

"Of course I do."

"How do you know it?"

"The Bible says so."

"Is it true?"

"Certainly it is."

"Can you prove it?"

"No, not positively; but we take it on faith," explained the judge.

"Do you accept that kind of testimony in this court?" inquired the boy, coolly.

But the judge didn't answer; he held up his hands and begged the lawyers to take the witness.

—*Washington Critic.*

## AS GOOD AS GOLD.

One of our people, reporting on a job temporarily not successfully done, added he hoped he would be excused as he did the best he could. We replied, "No." His task was to do it, to succeed—to get what he went for. If a given thing can be done, the man in question must do it, or sooner or later let some one try who can do it!

—JOHN A. WALKER.

## DIXON'S GRAPHITE AXLE GREASE.

The Columbus Buggy Company, Columbus, Ohio, manufacturers of buggies and carriages, advised our traveling representative that Dixon's Graphite Axle Grease is the finest grease they have ever had and all that we have ever claimed for it. They order it in barrel quantities.



At the present time, the largest use made of graphite, otherwise known as plumbago or blacklead, is in the manufacture of melting vessels, known to the trade as crucibles.

Graphite crucibles were first successfully made by Joseph Dixon in 1827. They are made in sizes ranging from that of an after dinner coffee cup to one in which a six foot man could easily hide. They are used for melting metals of all kinds.

THE JOSEPH DIXON CRUCIBLE CO., Jersey City, N. J.—the same Dixon people whose celebrated pencils have written so much of the world's history—have sent us a handsome booklet of 32 pages, printed on enameled paper and the cover executed in colors. This booklet is beautifully illustrated with half-tone engravings and is devoted exclusively to showing the various uses to which graphite is put. We were surprised to find graphite used for so many purposes. The booklet is called "Graphite Suggestions," and we think it would pay all our readers to write for a copy.—*The Western Painter.*

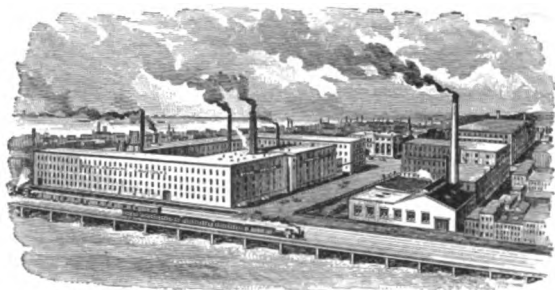
THE MAN who is worthy of being a leader of men will never complain of the stupidity of his helpers, of the ingratitude of mankind, nor of the inappreciation of the public. These things are all a part of the great game of life, and to meet them and not go down before them in discouragement and defeat is the final proof of power.

—FRA ELBERTUS.

ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

### BRANCHES AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
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Warsaw, Barcelona, Bergen, Morigen (Switzerland), Finland, Havana.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., April 1904.

### AN ENJOYABLE TIME.

While there are very many pleasurable memories in the minds of the Dixon staff, and many dates that, like fixed stars, are ever before them, they never hesitate to take on new dates and add to the stuff of which dreams and memories are made.

March 3, 1904, is the latest date put on the tablets of the Dixon staff. The occasion was the annual dinner by Vice-President Walker.

There were present twenty-five Dixon men, the range in time of service in the company being from two months to thirty-seven years. The youngest in service was Mr. G. P. Hutchins, and the veteran was Vice-President Walker.

All Dixon dinners are enjoyable affairs and this one was none the less so. Toasts were drunk to the much loved President and Vice-President and to the absent ones who so efficiently represent the Dixon Company both here and in foreign countries.

### "THE AMERICAN BUSINESS BOY."

Elsewhere in this issue is a highly interesting and instructive article on the above subject. It was written by the Vice-President of the Dixon Company at the special request of Mr. Marshall Cushing, Secretary of the National Association of Manufacturers of the United States of America.

Those who read it will find it in Mr. Walker's happiest vein and possessing a newness and treatment quite unusual in such subjects.

Although the life and work of Mr. Walker is very generally known, probably the following, from a late issue of the *New England Journal of Education*, will be considered timely by Mr. Walker's many friends:

"The active, energetic, thoroughly capable manager of the concern, the vice-president and treasurer, is John A. Walker, who came to the company as its first secretary in 1868, who has been general manager since 1881, and vice-president and treasurer as well as manager since 1892, and to whom more than to all other men combined, the business success of the concern is due. For the extension and growth of the pencil department he is entirely responsible. The records show that Mr. Walker was born in 1837, but no man bears his sixty-six years more lightly. His life has been one of the most tremendous activity, and he turns off an amount of work that would stagger most men because he possesses one attribute which Joseph Dixon (whose close friend he was) lacked: the power of using the services of other men and of not wasting his own time on small things. There are brave fighters who cannot command companies, and men who can command regiments or brigades under explicit orders, who yet cannot direct the movements of armies. Mr. Walker is the general, who, with his glass, takes in the whole situation and intelligently directs the many divisions, at the same time the minor details do not escape his attention. Outside the Joseph Dixon Crucible Company he is one of the governors of the Union League Club of Jersey City, is interested in clubs and societies and movements in Jersey City looking to the betterment of the condition of the citizens generally, was the president for several years of the Board of Education. With his business accomplishments he has a ready and facile pen, and could take to-day a high place in the literary world should he choose to bend his energies in that direction."

### USUAL RESULT.

"Ruined, and by a woman!" exclaimed the man at the desk, as he gazed at something in his hand.

"I fail to see the point," rejoined the other occupant of the office.

"Same here," said the party of the first part. "I was speaking of this lead pencil, which my stenographer has evidently been trying to sharpen."—*Chicago Daily News*.

### EASY WORK.

I'd like to have a nice soft job,  
Where I could simply be  
A sort of weekly visitor  
To draw my salary;  
And then, as that got burdensome  
And seemed inclined to bore me,  
I'd like to have some fellow paid  
To go and draw it for me!

—*Baltimore News*.

*Metal Industry* says: Steel of a quality equal to that made in crucibles has never been reached by the open-hearth or Bessemer process, and brass always gives better results when melted in crucibles.

## METAL GATHERING ON SPACEBANDS OF LINOTYPE.

H. G. writes from New York: "What causes metal to stick to the short slide of the spacebands? The bands are cleaned every day. This happens only on one machine." *Answer.*—One certain spot on the spaceband sleeve is presented to the mold at each successive cast of a slug in the Linotype, and the heat eventually oxidizes this part of the sleeve and puts the steel in such a condition that metal readily adheres to it. It can only be temporarily prevented by thoroughly removing the film or stain at this point and polishing the spot with powdered graphite.—No. 635 is the best.—*Inland Printer.*

## RED LEAD CAUSES SICKNESS.

Plumbers put red lead around the joints of a new iron pump at the minister's house at Penn Grove, N. J., and all the family were made sick from lead poisoning. The safest and best article for such a purpose (around water pipe joints) is an article made by the Joseph Dixon Crucible Co., being made from graphite. This is non-poisoning, allows joints to be easily unscrewed, and does not suffer from contact with fire.—*Master Painter.*

THE LIFE OF AUTOMOBILE CHAINS depends very much on the care they receive in the way of cleaning and lubrication. The application of lubricant to the outside of the chain is of doubtful value. Lubricant thus applied has a tendency to catch and hold dust and dirt, and does not readily get to the wearing surfaces of the pins and links, where it is wanted. The chains should be thoroughly cleaned several times a year with hot water and a brush and then with kerosene. After they have dried they are preferably given a treatment with some chain lubricant. The best chain lubricants are those which are solid when cold and are heated and the chain soaked in them while the lubricant is in the liquid state, the reason being that a dry lubricant will not collect dust to any extent. For this same reason graphite makes a very good constituent of a chain lubricant, and a leading graphite manufacturer now produces a graphite chain lubricant which is applied by the "heating and immersion" process. The chain must be left in the bath of lubricant long enough to allow the latter to penetrate into all the joints; it is then taken out and dried and cleaned of any lubricant adhering to the outside of the links.—*Horseless Age.*

## MR. JOHN A. WALKER

Becomes a Member of the Colonial Society, and is His Usual Jovial Serious and Entertaining Self.

The Colonial Life Insurance Company of America gave its sixth annual dinner January 16, and we quote from the "*Banquet Supplement*" the following:

One of the pleasantest and most popularly received incidents of the dinner next followed, viz: the introduction of the Vice-President, the Hon. John A. Walker, and the decoration of him with the emblem of membership in the Colonial Society. It was a truly delightful event.

Mr. Walker's popularity increases each year. That is readily explained. Those who have heard him speak once are anxious to hear him again, and those who have never

heard him, have been told so much of his qualities and powers as a speaker that they wait eagerly for the privilege. He received an ovation as he turned to the "boys," displaying on his lapel his badge of service pinned by the hand of the Second Vice-President.

When we say that Mr. Walker excelled even his reputation as a speaker, you can appreciate the difficulty of giving anything like a fair report of his address. Perhaps more conspicuously than any feature stood out his droll and easy humor, which about convulsed the audience. Keen in his wit and alert to use every opening, he makes a most enjoyable "banqueteer." The reason he alleged for his selection as chief orator was as funny as it was untrue. After a few minutes sport-making, the Vice-President expressed the appreciation of the Board of Directors of the work which had been done by the staff since the formation of the company, and their confidence in the splendid future of the Colonial. They were proud of the men who had brought the company to its high place, and had the utmost faith in their ability to continue the magnificent record. He was glad to meet the victors—the men who had done great things—the men who had overcome the difficulties and conquered discouragement and now were wearing palms of victory. He paid a splendid tribute to those who had fought with the company in its early battles and had lived to see the day of its triumph.

Six years ago he had talked of the necessity of building upon a sure and solid foundation. He was at that time seeing by foresight. Now he saw hindsight and knew that the Colonial foundation had been well laid, and that already an imposing structure had been erected, which was to grow in height and size as the years progressed.

The words of Mr. Walker produced a deep impression. It was worth the years and months of toil and thought on the part of the Field to hear from the Vice-President and the representative of the Board of Directors, that their work had been appreciated and that the future was looked into with the utmost confidence. There is a sincerity about Mr. Walker that hits home. His speeches have the true ring and for that reason their sound and their note stay long in one's memory. What he says is well worth hearing and not soon forgotten.

## ARTIFICIAL LIGHTS DEPEND ON CARBON.

It may be of interest to our readers to know that all forms of artificial light now in practical use depend for their lighting properties upon the incandescence of a solid—usually carbon, either in the form of a filament or a rod, as in the ordinary glow lamp or the arc, or in a finely divided state, as in gas and kerosene lamps. Graphite is one of the most useful forms of carbon.

## GRITTY.

"Fifty miles an hour," yelled the chauffeur. "Are you brave?"

"Yes. I am just full of grit," replied the pretty girl, as she swallowed another pint of dust.

The driving chain is also probably full of dust and grit and needs Dixon's Motor Chain Compound to keep it in proper condition.



(Reprinted from "American Industries.")

## HOW IS THE AMERICAN BUSINESS BOY TO GET ALONG?

By JOHN A. WALKER,

Vice-President, the Joseph Dixon Crucible Co.



I assume from the topic assigned me that I am primarily to address the younger people, those looking at the ladder or who are not higher than the first rung, and only to interest the seniors by comparison, or in a reminiscent way.

The first thought is, you won't all "get along." Once at the Gare de St. Lazare Hotel, in Paris, I ordered a canteloupe for breakfast, and a divine fruit came. Its luxury still lingers in my taste. Every morning thereafter I repeated the order, but never got a second melon like the first. Every orchard is strewn with rotten apples; the process of selection goes on everywhere. Many are called, few are chosen. Foolish people criticise the Calvinistic faith for its doctrine of election, when election is the doctrine of the universe: and in every walk and profession there are elect and non-elect, so that it is safe to say: all boys won't "get along." Hence, if some won't and some will, it is for the individual business boy quite a serious question: Am I one of the business elect? "Yes or no" remains with the boy himself.

If, then, some will and others won't, why the success or why the failure? Differences in talent, you say, explain some victories. In a broad way, yes; but many, many talented men are stranded. Difference in opportunities explains many a failure, yet some with no help make their own opportunities, and others with paths strewn with chances lose the road. It cannot be the particular industry, says Andrew Carnegie, as some will rise in dry goods, some in stocks, some as bankers, some in wool, some in iron and steel, some on land and some on sea—concludes it is "all in the boy himself"—and not specially in the industry. Some succeed, one doesn't know why the reason seems hidden.

It is not book learning exclusively, for some unlearned succeed.

It is not virtue especially, for somewhere it is written: "the wicked flourish like a green-bay tree."

It is not opportunities, for some of the most pronounced successes come without helping circumstances.

It is not capital, for all the industrial captains of to-day, to a man almost, began with nothing.

It is not good clothes or poor clothes, for examples of both succeed and fail.

It is not even good manners, for the paths both to the heaven of success or the hell of failure are strewn with examples of either type.

It is clear, then, that success is not exterior to the boy—for every exterior line that you point out, shows both failures and successes. So the boy who is to get along must look inward, look to himself. When we come down to bottom facts doesn't the success, the "get along," reside more in the boy's personality than anywhere else? It must be in the boy before it can come out. The great singing voices are natural, not made. The call to be a leading business boy should be as distinct in the boy's personality as the call of another to surgery or exploring. What, then, are the personality signs that point out the boy who will "get along?"

We should say, first, the overpowering, overmastering desire to climb this particular ladder. The stream flows better down hill. No great success was ever achieved by one indifferent to the path thither, or who could go any other way. This means the business instinct, the bent this way—so positively that no other way will marshal all the boy's inward force. This is fundamental—this starts the boy right; and the rest is impulse, training; growing delight in one's work, the white heat of enthusiastic satisfaction that the path is entered; then the glitter and excitement arises, the pace quickens, the faculties expand.

You have seen the hunter's dog—absorbedly, exactly, quietly he runs, when all at once he strikes the scent; and up goes the whoop of delight. It becomes now only a matter of time. With equal interest, with equal quivering, excitement and delight must the boy's work be in his special field, if he will reach the first rank. It is not primarily or mainly the money at stake, but the zest, the best exercise of the faculties possible. This way only, and no other way, will make the boy "get along."

This start, this glad start, should be made as early in life as possible. To get along the boy should get under way and under impulse while yet young. Most of the original work in all lines is done by young brains. This is shown by so many of the writers of our time. Dickens wrote his best books before he was thirty. Emerson, the great American philosopher, only repeated himself and said his old thoughts over again in a new dress after he was forty. Tennyson is said to have written best in his thirties. There is a quality of growth—when one is developing along his peculiar line—in youth that doesn't come later. Fertility, invention, vitality, are the fruits exclusively of youth.

Young brains in business are eager, susceptible, fond of impulse; they relish novelties, changes; the wax is not set—is still soft: and the impression of the times and circumstances more certain.

Another thing is to draw oneself together and prepare for a long do or die campaign—one of not shorter than twenty-five or thirty years. The preferences won't come sooner; they should not—for the boy's own good. The get-rich-quick is not of this type. The true business boy in-

stinctively will divine that he must lay his foundations well, and this takes a long time. If it is too great a sacrifice, if it seems too long, too little worth the long, arduous struggle, than it can be seen beforehand you are of the business none-elect. This also means that you early divine your purpose, your mission, and then—no change. Seek the right line and stay in the same path and bide the twenty-five or thirty years' time.

Then, and invariably, the technique of your chosen calling must be mastered. One's body should be kept in condition to have the brain do its best. This is not athletics, but training. Go to the theatre; notice how much more expressive are the features and the movements of the actors than those of ordinary people. This is training. Go to the circus and note the tight-rope walker. See him later ride two horses. See him jump the hoops with such ease. These things, so easy to them, are simply impossible to you. This is training. Go to the opera and hear the prima donna or the tenor sing three and four hours "on a stretch" in a hall hundreds of feet high, deep, long and wide. Where you could not be heard for five consecutive minutes, these people will sing for hours with seeming ease. This is the result of training in their technique. It is having oneself well in hand. So must the business man have his technique. The technique is bigger than the man and will tax his best faculties working at high speed. If he is the elect boy, he will master it all.

This technique must be largely absorbed. It cannot be taught in schools. It is incommunicable. You get it or you don't—as you succeed or you fail. It comes day by day, little by little. You cannot coach for it. You cannot exclusively read up to it. It must come from the boy's juxtaposition with events, and his appropriation of their teaching. The dizzy path trod by the leaders is only trodden by trained and tireless feet.

The excitement of this growing knowledge and capacity is intense. It thrills one's nature. It gives the growing boy command of himself and consequent command of others. It is the delight of life, this play of all the faculties; and the opportunities, like battalions, hunt for a man of this temper. You know what Mr. Carnegie said—that he pitied the man who could not find the romance and thrill of being in his business.

Another detail of success is boldness, and this comes of youth and this temper of spirit. Excited, thrilled, all faculties awake, gathering equipment from all surroundings, how could one be timid? Hence, by this law, the industrial captain is always bold and fearless. He treads with definite, certain feet. This overmastering boldness must have its own way; it refuses other direction. Thus comes the master's spirit, and the master always rules—both himself and others.

But alas for those who fail, who fall out of the race, the non-elect. It means lack of manhood, lack of quality; it means opportunities not discerned. The details are these: Shirking of work, neglect of gathering the equipment, not thinking things out to the end, lack of interest, wasted opportunities. Your ships pass in the night—a final loss of the race.

I end as I began. Not all American boys will "get along."

Some will be of the elect, and some will fall by the way. But in all cases it all remains with the boy himself. His destiny remains exclusively in his own hands. When he brings his unused talent and says, "I was not as well started as others," the inexorable judge will say: "No excuse; take his one talent away, and give it to him who has improved his ten talents."

### FAIRLY CAUGHT.

It touches the funny-bone to read in the *Boston Journal* of a New Haven grocer who amused himself at the expense of Mr. Isaac Bromley, a wit by inheritance, whose late father was the wittiest journalist of his time.

In company with his wife Mr. Bromley drove up to a grocery store in New Haven, but went in alone to give his order. He unrolled a long list of items and began to read them off. "And a box of stove-blackening," he concluded, with a sigh of relief.

The proprietor of the store was taking the order, and he owed Mr. Bromley a little practical joke account. "What color stove-blackening do you want, Mr. Bromley?" he asked, quietly.

Mr. Bromley looked thoughtful.

"Why, I don't know," said he. "I'll ask Mrs. Bromley."

He went out to the carriage, opened the door and poked his head in. "What color stove-blackening do you want, my dear?"

Mrs. Bromley looked at him. Then, over his head, she saw the convulsed face of the storekeeper, and her eyes sparkled with understanding—and sympathy.

"Use your own judgment," she said politely over her husband's head. "Mr. Bromley will be satisfied with any color blackening you send." Then she added, sweetly: "Hadn't you better get in now, Ike? As we drive along we'll think it over."

### DIXON'S FACING NO. 6726.



In this facing the graphite or plumbago used is the Ticonderoga brand, and is the most refractory graphite that exists. What we mean by refractory in this case is, that if a certain amount of Ticonderoga graphite was put in an open crucible and burned until the carbon was all exhausted, it would require two or three times as much time as would be required to burn the same amount of Ceylon plumbago.

It is specially prepared to meet the requirements demanded for a strictly high grade green sand facing, where the quality of the finished casting is the thing sought after. It is similar to Dixon's well known 2441, but contains more binding material and will therefore adhere to a dryer surface than Dixon's 2441.

One of our customers writes as follows concerning it:

"You will find by referring to your records for 1902 that these works used between 55 and 60 bbls. of this facing, and have been using it at about the same rate during 1903.

"We would state that we have always found this facing to be an exceptionally good facing and, unless something better turns up, we will continue to use this facing."

## CLEANING STEAM BOILERS.

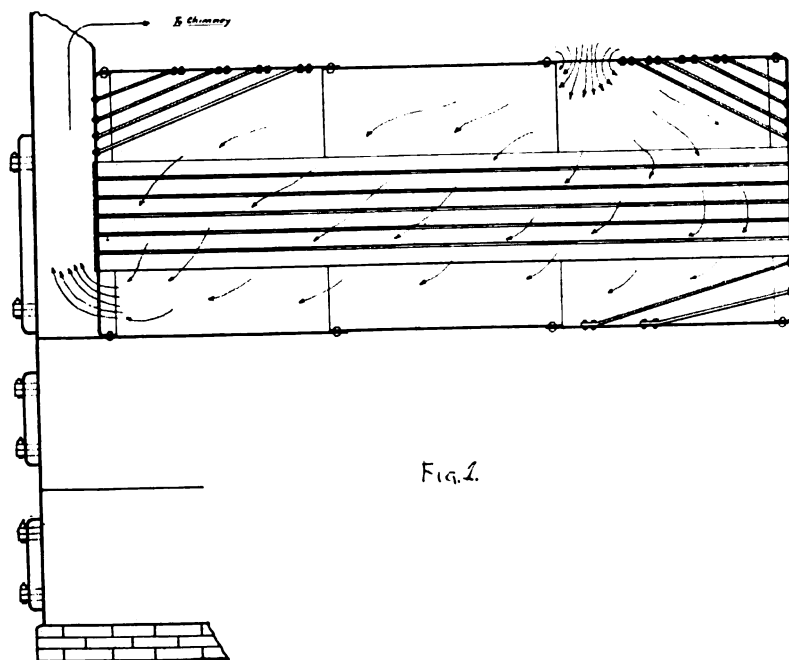
By W. H. WAKEMAN.

The most disagreeable job that the engineer of a small steam plant has to do, provided he does it well, is to clean his boilers. It is hot, hard and dusty work, therefore it is sometimes postponed longer than good practice admits.

The fact that, as a rule, the time that can be spared for such work is short, tends to make it more disagreeable, because the boilers and their settings are not cool. It is safe to say that many boilers are badly strained by unequal contraction during the cooling process, therefore a few suggestions will be made on the subject, which will prevent the trouble mentioned, if they are adopted.

It should be remembered that a boiler ought to be cooled evenly, for if this is accomplished it may be cooled quickly without damage.

Where the time is very limited, all of the steam should first be allowed to escape to the atmosphere, if it cannot be used for a good purpose. Assuming that it is a tubular boiler fitted with an internal feed pipe, some of the water may be run out of the blow pipe, and cold water run in un-



til the water level reaches the third gage. This should be repeated, say, four times, each time allowing more hot water to escape than previously, but always filling up to the third gage. All of the water may then be allowed to run out.

After the boiler is known to be free from steam and water, the top and bottom manhole covers should be removed; then close the furnace and ashpit doors and open the damper. This will cause cold air to rush into the top manhole, circulate around all of the tubes, touch nearly all parts of the heads and shell, then escape through the bottom manhole as illustrated in Fig. 1.

After air has circulated in this way for one hour or more, according to the time that can be spared for it, a hose nozzle may be put in the top manhole, and the whole interior thoroughly washed out. The bottom manhole cover may then be replaced and water run in until it shows at the sec-

ond gage, after which the top manhole cover may be put in and the boiler is ready for service again.

While it is not practical at this time to describe the process of cooling off all of the various kinds of boilers now in use, it is well to emphasize the fact that the same important principle applies to all, for they should always be cooled as evenly as possible.

The first time that I tried to clean a tubular boiler, I did not know how to do it. The difference in engineers, in this respect, is that while some of them do not know how at first but soon learn, others do not understand what is wanted after they have done it a hundred times. A man is not to blame for being born unwise, but he is guilty if he always remains ignorant.

The first time that I removed a manhole cover, I tore the gasket into several pieces and spoiled it as illustrated in Fig. 2. This was due to the fact that nothing was put on it, therefore it stuck to both cover and boiler head with various degrees of tenacity; so, of course, it came off in pieces.

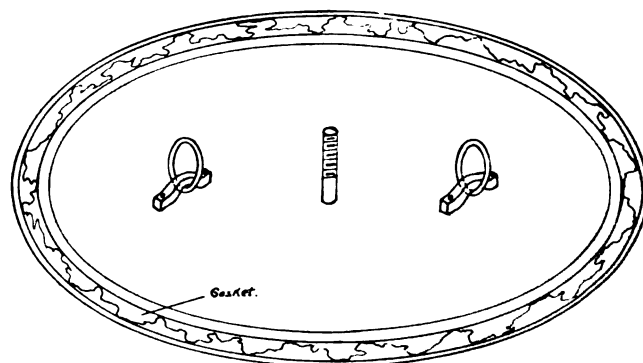
If an engineer has several more gaskets on hand, it is bad enough to ruin one of them needlessly; but if it is the last one he has and the stores are all closed so that he cannot get another, it may cause him serious trouble and his employer several dollars.

This was my case exactly, and it will take me a long time to forget all the chagrin and annoyance caused by the accident. After this experience I learned to put the gasket on the cover; then smear the upper side with Dixon's Graphite mixed with cylinder oil; also to cover the inner part of the head (where the gasket comes in contact with it) with the same preparation.

After that, when I took a manhole cover out, the gasket always stuck fast to the cover but came off from the boiler head freely.

How many times do you suppose did I use the same gasket? Well, it came off so nicely and fitted into place so easily when put back, that I kept an account of the number of times it was replaced, until I got tired of using it and wanted to see how a new one operated, for I began to think that the old one would never wear out. After using it ten times I cut it off and threw it away.

Let us put down a few figures relating to these facts and note the result. At that time those gaskets cost about



\$1.00 each, and are worth about 75 cents now. I used one gasket and say 25 cents' worth of Dixon's Graphite to pack

that manhole cover ten times. Total cost, \$1.00. With nothing on the gaskets to prevent sticking, it would have taken ten gaskets, at 75 cents each, or \$7.50. Difference in favor of Dixon's Graphite is \$7.50, less \$1.00, leaves \$6.50, which is a very large percentage on amount invested. Perhaps some expert mathematician will make the necessary calculation and inform us of the exact percentage. It does not require figures to show that it is worth while to save \$6.50 on one boiler for packing one head in one year.

There is another incident relating to this useful and inexpensive material that I must relate, as it is interesting and, like others stated, it is strictly true, for none of them are fancy sketches:

While sitting at the desk in my engine room, writing down a former experience with graphite, one of my duplex hot-water pumps began to groan.

How exasperating it is when a fellow desires to have things run smoothly while he writes a letter, to have a pump, that is only a few yards distant, send out unearthly groans and moans.

It is well to keep an even temper in such a case, if possible, and apply a remedy at once. This pump is fitted with a good sight-feed lubricator and there is a common brass oiler on the steam chest. A few spoonfuls of graphite was mixed with cylinder oil and put into this oiler. The result is, that while I am writing this letter that pump is so quiet that I have looked to see if it is running. It is and has been working all the time I have been occupied in writing this letter, but you could not tell, unless you saw it, and nothing else was done to cure the trouble except to use graphite as described. Of course, this result is not unusual, as it is to be expected every time; but I mention it as a matter of interest to engineers and steam users.

### IN PURSUIT OF THE BEST PENCILS.

(Copy of a Letter received by us from a National Bank.)

*The Dixon Pencil Co., Jersey City, N. J.:*

KIND SIRs

I am in persuit of finding the place where the best pincils are made you know that meanes a great deal i have ben trying to get your no. 2i9 -american graphite.artist . v.v. h — hhhhh. pencils I asked all the dealer s heare and they dont seame to wanto get them for us in the bank and we must have them sas they are avery hard pencil and that is the only kind that we can youse for journal work as all the other pencils are all to soft the kind that i mentioned to you they carry a needle point so know if you think that you fully under st and. the kind i want please and send me one dozent by mail at once eather send them to me direct ore to some dealer. but you might just as well send them to us direct as we must have them and the dealers dont seame to wanto cary them in stock as there is little sale for them o out side of our business so please and send them at once fore i only h la ve a little sub yett i have ben at our dealers forover two weekes and havent got them yet you nedent feare that you wont get your money we will send you the money as soon as we get the penculs and if you dont wanto send them direct ore bill them direct .send them direct and bill them through a jobber but at ennyrate send them will be pleased to heare from you at once.

Truly yours, ML — — —

## Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, typewriter work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing.**

**Dixon's Plumbago for Powder Glazing.**

**Dixon's Plumbago Foundry Facings.**

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite.**

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Automobile and Bicycle Lubricants.**

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Motor Chain Compound**, for perfectly lubricating transmission chains.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians.**

Special circulars with detailed information sent on request.



### THE MAGICAL NUMBERS.

As we haven't seen the following table in print for a long time, our readers may welcome it.

Outside of the trick and fun in it the wonder is how the originator of it went to work, and wherein lies the secret; possibly some of our readers who are mathematicians will tell us.

Request a person to find in what columns his age is indicated. You can at once then tell him what his age is. You can tell any number under 64 by means of this arrangement of numbers.

1	2	4	8	16	32
3	3	5	9	17	33
5	6	6	10	18	34
7	7	7	11	19	35
9	10	12	12	20	36
11	11	13	13	21	37
13	14	14	14	22	38
15	15	15	15	23	39
17	18	20	24	24	40
19	19	21	25	25	41
21	22	22	26	26	42
23	23	23	27	27	43
25	26	28	28	28	44
27	27	29	29	29	45
29	30	30	30	30	46
31	31	31	31	31	47
33	34	36	40	48	48
35	35	37	41	49	49
37	38	38	42	50	50
39	39	39	43	51	51
41	42	44	44	52	52
43	43	45	45	53	53
45	46	46	46	54	54
47	47	47	47	55	55
49	50	52	56	56	56
51	51	53	57	57	57
53	54	54	58	58	58
55	55	55	59	59	59
57	58	60	60	60	60
59	59	61	61	61	61
61	62	62	62	62	62
63	63	63	63	63	63

Here is the secret. When you learn what columns the number is in, simply add the numbers at the top of each column and the trick is done.

### OIL AND GRAPHITE FOR AIR CYLINDERS.

**A Letter That Should Interest Every Engineer and Which Should Command the Attention of Everyone Interested in Efficient Railway Service.**

"I have been using Dixon's finely pulverized Flake Graphite, No. 635, in air cylinder of air pump with most satisfactory results.

"I mixed about a tablespoonful with half-pint of cylinder oil and put it in squirt can, and have been giving the air cylinder (through oil cup) about half a teaspoonful in twenty-four hours. Of course, I keep the contents in the can well shaken up.

"Before I used the graphite, pump was running hot and groaning and squeaking all the time. Since using the graphite and cylinder oil in the manner mentioned, I have not heard a groan or a squeak, and the pump runs cool and will pump all the air wanted at any time."

Samples free to those who are interested.

### THE UNION FOREVER.

The week of January 3rd to 9th was bitter cold—mercury 10 below—and very snowy. We were building a large brick extension. The poor contractor was trying to get his work done. Four days, on account of cold and snow, the bricklayers could not work. Saturday, January 9th, was a fine day—brilliantly clear and temperature just right for good work, but at 12 noon, the bricklayers quit because the union forbade work Saturday afternoons; so the only fine half day of the week was thus wasted. This is what the union dictated. We wonder whether this was what Daniel Webster had in mind when he said, "The Union Forever!"—JOHN A. WALKER.

### IT MAY BE TRUE.

One of Sam Mayer's friends tells us that when Sam was a boy looking for something to do he saw the sign, "Boy Wanted" hanging outside of a store in New York. He picked up the sign and entered the store. The proprietor met him.

"What did you bring that sign in here for?" asked the storekeeper.

"You won't need it any more," said Sam cheerfully. "I'm going to take the job."

The Ghost in Man, the Ghost that once was Man,  
But cannot wholly free itself from Man,  
Are calling to each other thro' a dawn  
Stranger than earth has ever seen; the veil  
Is rending, and the Voices of the day  
Are heard across the Voices of the dark.  
No sudden heaven, nor sudden hell, for man,  
But thro' the Will of One who knows and rules—  
And utter knowledge is but utter love—  
Æonian Evolution, swift or slow,  
Thro' all the spheres—an ever opening height,  
An ever lessening earth.

—TENNYSON.

THE INTERLOCKING of the microscopic roughness of the rubbing surfaces causes friction.

The cure is to fill up these irregularities and make the surfaces perfectly smooth.

Dixon's Pure Flake Graphite will do this, furnishing a hard, glossy surface of exceeding smoothness. For this reason, Dixon's Flake Graphite deserves a place wherever rubbing friction is to be overcome.



### A HANDY ARTICLE.

Made of Best Fire Clay and Graphite.

Handy alike to the stove repair man and the stove user. Useful to any one having stove bricks or linings that occasionally need repairs. Mixed with water it becomes a plastic cement useful for filling all cracks and breaks in stove and furnace linings.

# Graphite

VOL. VIII.

MAY 1904.

No. 6.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

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## CYLINDER LUBRICATION WITH DRY GRAPHITE.

By LEWIS F. LYNE.

During the past thirty years I have used Dixon's Pure Flake Graphite and never has it been found wanting. Though at times subjected to very severe tests, it has always given the desired relief. Notwithstanding the fact that so much has been said and written on the subject, graphite might be used far more extensively than it is.

I have noticed in the engineering and mechanical papers of late inquiries as to the use of graphite for lubricating the cylinders of steam engines without the addition of oil. This is not at all a new process, for in the year 1879 I was acquainted with an engineer in the United States Navy Yard, Brooklyn, who had for many years used it that way in his engine cylinder.

This gentleman had charge of the stationary engine which ran the machine shop, his engine was built at the Delamater Iron Works, was designed by Ryder and had the Ryder cut-off, a most complicated affair, as all engineers know who have ever had anything to do with that type of engine. The friction of the cut-off valve gear was terrific and required perfect lubrication, otherwise there was constant trouble with groaning, etc.

Mr. Wright (for that was this engineer's name) tried various oils in this cylinder and finally with graphite and water mixed to a paste filled a common screw-top tallow cup and attached it to the steam chest. About one ounce of graphite was used in the morning and again at noon and, during the day's run, the condensation of steam within this tallow cup would carry the graphite through the valves into the cylinder. Mr. Wright informed the writer that he had been using this mixture for several years past with the most satisfactory results.

At that time plaited or braided hemp packing was pretty generally used for piston rod stuffing boxes and valve stems. The graphite found its way into this packing and lodged there so that the rods and valve stems were polished like a mirror. It also worked into the joints on steam chest and cylinder head, keeping them in fine condition and protecting the rubber gaskets. No oil was used in the cylinder and water was added principally to prevent the

dry graphite from blowing about upon the engine room floor.

In this instance the exhaust steam passed into the atmosphere, but there is no reason known to the writer why this method could not be used in connection with a condenser, as the graphite would be caught in passing through an eliminator on its way to the condenser. It has been the custom for the past few years in condensing plants to use as little cylinder oil as possible, to prevent its getting into the boiler where it would cause blistering or bagging of the boiler plates.

## DISCIPLINE.

"We need discipline in our maturity as in our childhood, for we are always at school; but the relation of teacher and public has been changed, and that change marks the difference between a restless and restful soul."

OIL stains are a source of unending anxiety and money losses to a textile manufacturer.

The use of Dixon's Pure Flake Graphite greatly reduces the quantity of oil necessary for a given effect, lessening the tendency of a shaft or pulley to "sling oil."

The regular use of Dixon's Flake Graphite throughout a manufacturing plant substantially lowers power costs, reducing friction loads, coal and oil bills, as well as saving many costly shut-downs and repairs to equipment.

Graphite lubrication is a matter worthy one's careful attention.

The sportsman finds a score of good uses for Dixon's Graphitoleo for lubricating gun locks, gun barrels, fishing rod ferrules, oar locks, clay pigeon traps, etc.

The same mishaps that cause the engineer trouble and worry cause wasteful money losses to the plant owners.

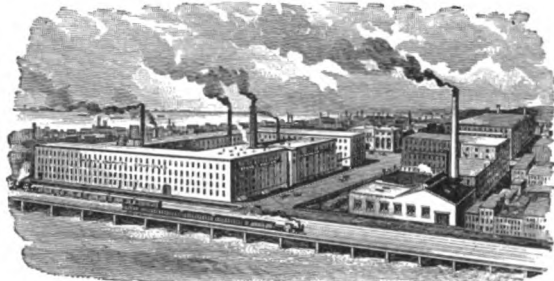
The regular use of small quantities of Dixon's Pure Flake Graphite will insure so much better lubrication of all valves, pistons and bearings, that friction troubles are lessened in the engine room and shops, and friction costs greatly reduced.

BUSINESS developing is very interesting and educating work. What a great many jobbing and manufacturing concerns need most is a business developer who can work from an office standpoint (not to go on the road), and procure for his house new customers, nurse the present trade, and endeavor to bring back to the fold a large per cent. of the customers who have fallen by the wayside.—*System.*

ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

### BRANCHES AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Morge (Switzerland), Finland, Havana.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
*President. Vice Pres. and Treas. Secretary.*

JERSEY CITY, N. J., May 1904.

### MEXICAN GRAPHITE VS. FLAKE GRAPHITE AS A PAINT PIGMENT.

Success invariably brings its train of imitations and substitutes. The most pronounced success of Dixon's Silica-Graphite as a paint pigment for protective paints, has brought upon the market any number of imitations and substitutes that are more or less worthless. Curiously enough, these imitations and substitutes are offered not only to the public but to the Dixon Company as well. They are offered to the Dixon Company on the sole ground of cheapness.

We have most distinctly stated, time and time again, that we are headquarters for graphite and the only concern dealing in all grades and kinds; that we have made a most careful study of graphite ores and the value of the different grades and forms of graphite for the many different uses to which graphite is put, and that after years of careful experimenting and testing, we determined beyond any question, that for a thoroughly protective graphite paint the only proper graphite is a tough flake graphite finely pulverized, combined with a pure, finely pulverized silica. Tough flake graphite and silica properly prepared forms a pigment without an equal for filling, covering, spreading, elasticity and durability.

The soft forms of graphite which test out so well in the laboratory cannot and do not show durability when exposed to practical conditions—the wear and tear of abrasion due to workmen and the exposure of storms of dust, rain, sleet, etc.

The amorphous forms of graphite are largely composed of clay and have only small value as paint pigments.

The above remarks have been drawn from us by our receiving a sample of Mexican graphite, which is offered us as a graphite paint pigment at a price less than one-half of what it costs us for Dixon's Silica-Graphite. We append our chemist's report, omitting name of sender:

LABORATORY OF THE  
DIXON CRUCIBLE COMPANY.

December 29th, 1903.

### CHEMIST'S REPORT.

Sample of ——— Mexican Graphite for Paint  
Forwarded by the — — — — —  
Letter, December 22, 1903.

### DIXON ANALYSIS.

Moisture .....	5.89
Graphite .....	56.92
Ash.....	37.19

Simply an ordinary grade of Mexican graphite with a dull black color.

The letter states that "the material shows it to contain 75 per cent. pure graphite carbon," according to analysis made in 1899. As a matter of fact, the sample submitted to Dixon laboratory assayed only 56.92 per cent. graphite.

While the Mexican graphite resists acids and alkalis, as all good graphite should, its carbon does not appear to be so perfectly graphitized as in the Dixon product. It lacks the submetallic lustre, the smoothness and spreading capacity of the Dixon pigment, being deficient in some of the very properties which characterize the better grades of graphite.

On the other hand, the Dixon pigment is a pigment in every sense that the term graphite implies.

(Signed) F. S. HYDE, Chemist.

### ABOUT GRAPHITE BRUSHES.

Imperfect commutation and its accompanying sparking is an evil that never grows anything but worse.

Copper brushes are much more prone to cause this than carbon, and carbon than graphite, simply because graphite brushes offer a higher resistance to self-induced, back currents in the coils, at the moment of commutation.

If graphite brushes are made of pure material and have sufficient contact area, they will reduce sparking to its minimum, and will entirely stop any increase due to increasing roughness of wearing segments.

Graphite, from its peculiar nature, puts a smooth surface and high polish on the commutator without the employment of any lubricants or "compounds," and will not cause any appreciable wear, even after long periods of steady use.

In our engine-room is a 100 K. W. unit that has run steadily for three years at 250 R. P. M., and ten hours a day, and its commutator is glassy-smooth, cool, and the wear scarcely detectable after this steady service.

The greatly increased and rapidly increasing sales of Dixon's Graphite Brushes bear strong witness to their superiority, on every count, to the cheaper, gritty carbon so recently thought indispensable.

—G. P. H.



The above picture shows that portion of the Baltimore ruins wherein was located the Union Trust Building, in which the Dixon Company had its Baltimore office.

The larger buildings that are still standing in the picture are simply shells, all of the interiors having been destroyed by fire.

The Union Trust Building is the imposing structure, shell though it is, at the left of the center of the picture, and the Dixon office is shown by the white cross. Everything in the office, including furniture, pictures, etc., was absolutely destroyed, the only things remaining were a half dozen graphite crucibles, one or two graphite stirrers and a few cases of Dixon's Stove Polish. These are now in the window of our Philadelphia office, and they serve to show the refractory nature of graphite products.

#### **"THE WAY OF THE TRANSGRESSOR IS HARD."**

The following memorandum comes to us from a friend of the Dixon Company:—

"On my last visit east, I met a man on the train who was formerly bookkeeper for our highly esteemed friend Mr. Blank from ——. This Mr. Blank is the fellow who 'went broke' and soaked everybody to the limit. I asked the former bookkeeper what had become of Mr. Blank and he said the last report he had was to the effect that he had gone to —, and not being so familiar with the laws there, had started some swindling game, and before he had hardly gotten under full swing they arrested him and gave him eighteen months beating rocks on the street and that he is still at it."

This Mr. Blank is an out and out confidence man, and if this paper ever meets his eye (and stranger things have happened) he will know that we are pleased at his present occupation. We hope the rocks are good hard ones and that it will take a good blow to break them.

—JOHN A. WALKER.

#### **GREASE LUBRICATION FOR AUTOMOBILES.**

Where grease cups are provided on automobiles, then it should be remembered that there is no grease quite so useful as a grease that contains five to ten per cent. of Dixon's pure flake graphite.

Such greases are made by the Dixon Company in six degrees of hardness according to the heat that they are to withstand. Grease lubrication is more economical than oil lubrication and is better in many ways.

#### **THE MODERN MAY QUEEN.**

The Modern May Queen has now to change her merry note. Her song nowadays is too often of this reformed pattern:

If you waken very early, do not call me, mummy dear,  
To-morrow'll be the coldest day of all this cold New Year;  
Of all this cold New Year, mummy, the keenest, bitterest  
day,  
And I must be out in it all, mummy, for I'm to be Queen  
o' the May.

There'll be many a red, red nose, mummy, but none so red  
as mine,  
And our teeth will chatter more than our tongues, as we  
trip round the Maypole fine.  
For there'll not be one single gleam of sun the whole of the  
livelong day,  
And the chill east wind will blow, mummy, when I'm to be  
Queen o' the May.

I have had to find flowers for my garland—I call it a  
blooming shame—  
So I gathered some rathe primroses, for I am a Primrose  
Dame.  
There's a bunch of these, a few snowdrops, with just one  
crocus gay,  
And some faded foreign violets, to crown me Queen o' the  
May.

Let me sleep as late as you can, mummy—it is warm and  
snug in bed;  
And please put out my fur-lined cloak, with the quilted  
hood for my head,  
My strongest winter boots, my mitts, a stout umbrella,  
and—stay,  
I really must have my muff, mummy, since I'm to be Queen  
o' the May.

You'll be glad to see me get back alive, when the night  
winds come and go,  
And the fields and lanes are ankle-deep in the May-day  
sleet and snow.  
I must go through with it now, of course, but never again,  
for aye,  
Will I be Queen o' the May, mummy, will I be Queen  
o' the May.  
—*London Globe.*



**HENRY ALLISON NEALLEY.**

Mr. Henry Allison Nealley, for three years special paint representative for Dixon's Silica-Graphite Paint in New York City and New England, has been appointed manager of the new paint office of the Joseph Dixon Crucible Company, Paddock Building, 101 Tremont Street, Boston, Mass.

Mr. Nealley became connected with Dixon's home office in 1901, and has won advancement by his activity and ability in doing things well. Mr. Nealley is a native of Bath, Maine, and subsequent to being a Dixonite, served in a reportorial capacity with the Bath newspapers, with later advancement to associate editorship.

Mr. Nealley is very favorably known to architects and engineers and to the railroad and railway officials, having represented the Dixon Company at different conventions.

We add Mr. Nealley to our group of Dixon men which appeared in October (1903) GRAPHITE.

The phrenological reading is made from photograph by Fowler & Wells, New York. The reading is so accurate that we who are intimately acquainted with Mr. Nealley, can fully endorse the delineation.

*Notes on Character from a Photograph.*

By J. A. FOWLER.

The photograph of this young man indicates that he is ready for work, in fact that he takes pleasure in his work, and will make others feel the same concerning their share of it when they come in contact with him. He cannot treat slightly anything that he considers is worth doing. His general mental make-up, his education and his bias of mind have all been the other way, and therefore he will throw his heart and soul, in other words, his interest, into whatever he undertakes to do. There will be no doubt about his eventually taking some important line of business that is well defined, conscientious in principle, intellectual in its trend, aggressive in its requirements, up-to-date in its environments and successful in its future working. His forehead represents the brow of a thinker and at the same time of a worker. He is not simply a philosopher, but he is a man to put into execution some good, original plans when he has made up his mind that a thing is right,

honorable, useful, clean and manly. He has considerable geniality of manner which will tell to a good effect if he enters a business life, and he will know how to handle men with good results.

Thus he will be known for his wide-awake mind, his well-balanced disposition, his capacity to place men where they belong and his ability to do his own thinking, assume responsibility, and keep an excellent record of what he has accomplished when working for others. He will show some literary and speaking talent as he grows older.

### **AN EMERGENCY BRASS FURNACE.**

While visiting a small repair shop and foundry recently, the writer saw a small brass furnace that was characteristic of the place. They started to build a furnace for using crude oil as fuel, but before the furnace was completed a hurry-up order came in for a heavy brass casting. There was not sufficient time to send to the nearest foundry, so a half finished furnace was hurried into condition for a coal fire and charged. An air pipe for furnishing blast to the furnace had already been placed in position and the shell was simply placed over this and lined with fire brick, the fire was started and anthracite coal packed about the crucible. The blast was then turned on, and in an unusually short time the metal was ready to pour. The results were so satisfactory that all thought of further improvement was abandoned and the furnace is still in use as it was so hurriedly pressed into service. A description of the construction of the furnace may be of interest to others who require some device for melting small quantities of brass occasionally. Fig. 1 shows a section of the furnace. It

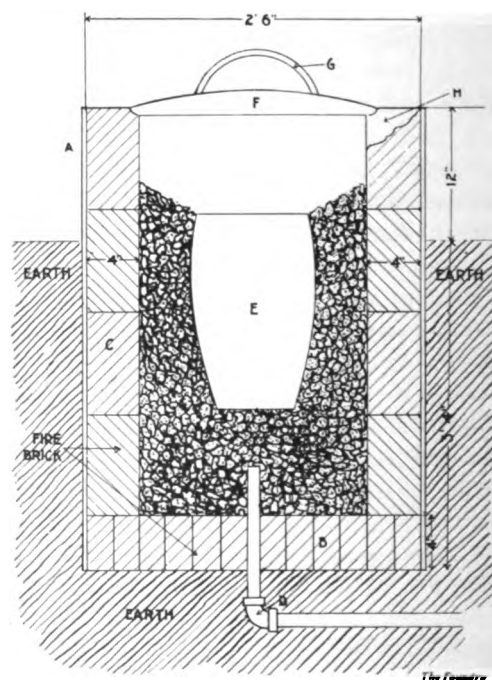


FIG. 1.—AN EMERGENCY BRASS FURNACE.

consists of an outer shell A lined with fire brick as shown at C. The bottom of the furnace is all composed of fire brick. The cast iron cover F is provided with an iron handle G. The products of combustion escape through nicks cut on the edge of the brick work as shown at H.

Dimensions are shown on illustration. The blast is taken from a small centrifugal blower which supplies the blast for the forges in the smith shop and is introduced through a one and one-quarter-inch pipe shown at G. This pipe extends about four inches above the bottom of the furnace. The fuel consists of anthracite coal of about grate-size. A bed of about 8 to 12 inches thick, depending upon the charge to be melted, is placed in the bottom of the furnace and the crucible, E, set on top of it; coal is then filled in around the sides of the crucible up to the top as shown. Fig. 2 shows the general appearance of the furnace as installed in the shop. The crucible can be seen standing at the right and the cover at the left.



FIG. 2.—AN EMERGENCY BRASS FURNACE.

Charges of from 200 to 350 pounds can easily be melted in this furnace and by having a second crucible charged ready for introduction into the furnace as soon as one is removed, it is possible to melt from three to four charges in succession. In the latter case the coal filled in about the first crucible falls down to form the bed for the succeeding one.—C. B. A. in *Foundry*.

### ENTIRE WEST PROSPEROUS.

**Doubt and Pessimism Which Have Dominated the East for a Year Are Not Found West of the Mississippi Nor South of St. Louis.**

When Edmond A. St. John, of the Dixon staff, returned from his Western trip at the end of 1903, he reported the West to be in a most prosperous, hopeful and independent condition.

A short time ago Mr. George J. Gould, after a trans-continental tour of his railway, is reported by the *New York Herald* as saying:

"With the exception of Colorado and Utah, where labor trouble has temporarily impeded the onward march of industry, we have found everywhere a very high degree of prosperity. This was especially true of the Southwestern cities and California. The banks are on a solid basis. The business men and the farmers have more money than they ever had before, and this means prosperity, industrial advancement and the distribution of vast natural resources. High prices for cotton have made the State of Texas opulent beyond expectation, and there is a good prospect for a big crop next season.

"New Orleans and Galveston have profited by the great volume of trade that has passed through these ports during the last year, and at Galveston the citizens are building a

great wall seventeen feet high, seventeen feet across and three and a half miles long to protect them from the ocean. Two miles have already been built. I mention this to illustrate the remarkable recuperative power of the Western cities. Galveston, devastated a few years ago, has risen from its desolation and is willing to fight with greater vigor than before for its existence.

"The doubt and pessimism which have dominated the East for a year are not found west of the Mississippi nor south of St. Louis. The setback in Colorado is only for the present. As soon as the labor troubles are settled that State will join the others which are now sharing the bulk of the prosperity."

Mr. John A. Walker's editorial in February *GRAPHITE*, "For Shame to Cry Bad Times, for Shame!" was based on Mr. St. John's report. As Dixon goes so goes the country.

### FORCE FEED LUBRICATION.

We have had quite a little to say from time to time in *GRAPHITE* concerning force feed lubrication.

A report comes to us from Chicago concerning tests made with the Hills-McCanna pump on a large compound pump for charging water tanks for elevators. Formerly they had been using one quart of oil every twelve hours, but after putting on the Hills-McCanna pump they ran 100 hours with one quart of oil to which 15% of Dixon's flake graphite had been added. The 15% of graphite was equal to about three ounces of flake graphite. The pump proved to be such a saving device and the cylinders were in such fine condition that the chief engineer had two more pumps of the same make installed on two of the other water pumps. The steam pressure in cylinders was 80 pounds.

Chief engineer of the Ashland Block, where the test was made, stated that there is nothing in his opinion that can make a better lubricant than is made with good oil to which 15% to 20% of Dixon's flake graphite is added. When the graphite is added, a much cheaper grade of oil can be used with good results.

Another test was made with the same make of pump on a compound engine at the C. H. Mears Lumber Company's plant in Chicago. The engine is of 375 H. P. The engine had been using one quart of oil per day of ten hours running. When the test was made with the Hills-McCanna pump, one quart of oil was used to which three ounces of Dixon's flake graphite had been added and this quantity of lubricant lasted for forty-five hours.

Test was also made of the same pump on engine by using water and 22% of Dixon's No. 1 flake graphite, and the results were very satisfactory; the piston rod was in fine condition and the valves worked perfectly. This test was made on a run of 40 hours.

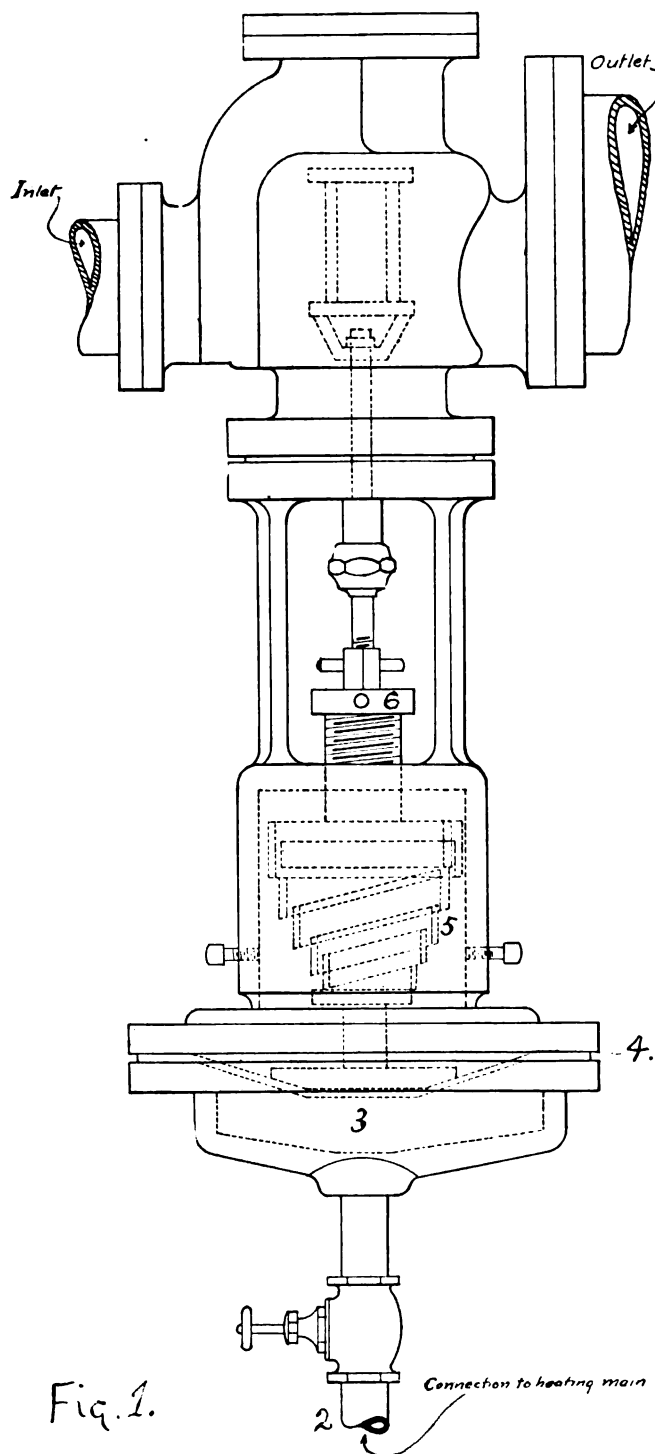
Some think that water and graphite would make a good lubricant for steam cylinders, but the majority of engineers seem to object to using water in place of oil. The Dixon Company has always advocated the use of oil and graphite.

Dixon's Bar Belt Dressing meets every demand of the mechanic for handiness, and of the owner for a dressing that will stop slip and not injure leather or rubber.

## REPAIRING AND ADJUSTING MACHINERY.

By W. H. WAKEMAN.

If matters were so directed in this world that machinery would never to be repaired or adjusted, the life of an engineer would be much easier than it is now, because he would have so much less work to do, but on second thought I guess that matters are about right as they are, for if there were no repairs or adjustments to be made, steam users might conclude that engineers are not necessary, and



that would make some of us feel worse than it does when we go home after being on duty thirty-six hours repairing a break-down, or adjusting and testing an obstinate machine.

The operation of a modern steam heating and ventilating plant affords an engineer a first rate chance to exercise all

the ingenuity in his possession, also all that he can borrow, for there are few or none of us that do not borrow in some form or in some way.

In such a plant high pressure steam is always wanted for engines and pumps, but only a low pressure is required for heating, therefore pressure reducing valves must be used to regulate pressure in the large mains.

Some time ago I found it necessary to remove a spring from one of these valves, the construction of which will be understood by referring to Fig. 1. Steam at high pressure enters the smaller side, is reduced by throttling action of the valve, and passes into the large main at low pressure.

Steam from the low pressure main exerts its force through the small valve and pipe 2, and this passing into the chamber 3 presses on the rubber diaphragm 4. The upward pressure so obtained is opposed by the spiral spring 5 and the tension of this spring determined the pressure used in the heating mains. The tension can be regulated within certain limits, by the screw 6.

Steam from the heating main condenses, causing water to stand in the chamber 3 and as there was a small leak in the diaphragm 4, some of this water found its way to the spring 5, causing it to become covered with rust and corrosion, but this could not be known until the spring was removed.

While this spring was new and before it was first put into the reducing valve, it should have been coated with Dixon's Graphite mixed with cylinder oil, as this mixture would have protected the steel from corrosion. In such a case the graphite must be rubbed into the surface the same as wood filler is rubbed into wood, in order to get the best results.

A new and stiffer spring was put in place of this one, but care was taken to carefully cover it with Dixon's Graphite and cylinder oil as above described, and it was well rubbed in, making a satisfactory job.

Where the steam pressure is uniform in all parts of a building, the water of condensation is carried to a common receiver and thence returned to the boilers, but where the pressure varies, the case is different.

In one building that I have charge of, three different pressures, which of course vary widely, are carried, hence it becomes necessary to put a trap on the end of each line, and have them all discharge into a common return pipe. As traps are required at other points, more than a dozen are in use.

Now, a trap in good order is a very good thing. Perhaps this statement is superfluous, and yet it may not be, because I wish to make a contrasting statement and in order to do this the good side of the matter must be shown first. Now, a trap in bad order is a very bad thing. As I look at this statement it appears about as superfluous as the other, yet both are wanted at this time. If a trap that is in bad order is to be put in good order, it must be taken apart. Here is another self-evident truth, but it is all in the program.

Every time that I have attempted to take a new trap apart (after it has been used for a short time), the gasket has been destroyed, requiring a new one to replace it, and while it takes a good sized piece of packing, it also requires

some time, which frequently is valuable, to cut out the new gasket.

Why do not the manufacturers of such appliances make some provision for taking them apart easily? A little consideration will serve to answer this question, as it is for their interest to make packed joints that will stay packed, and this is of more importance than anything else from their standpoint, and they are right, too.

For reasons of my own I deemed it necessary to overhaul several of these traps, and in order to present the point in view Fig. 2 is introduced, as it shows a plan of one of

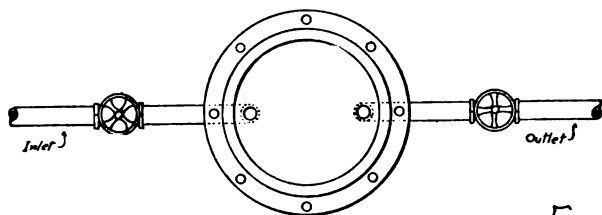


Fig. 2.

them, with its inlet and outlet valves, and a gasket placed inside of the bolt holes. The by-pass is not shown.

Fig. 3 is an elevation of the same trap, showing the cover

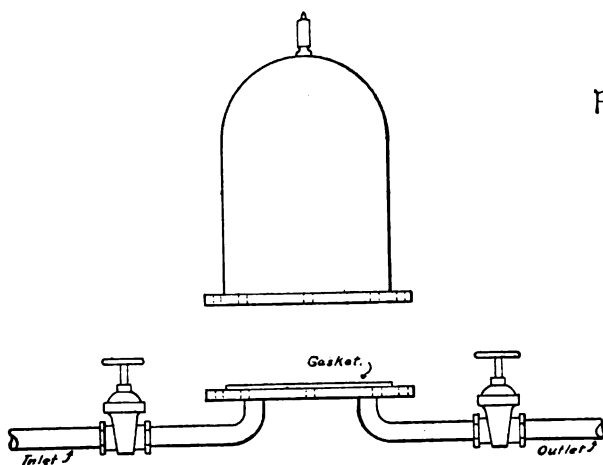


Fig. 3.

raised as it must be in order to clear a large float which is not shown. The internal parts of some of these traps badly needed repairs, but this is not the main point here, as I wish to write more particularly concerning the gaskets.

The original ones held so fast that there was danger of breaking the cast iron tops when removing them. It was then necessary to clean both surfaces, as they were covered with remnants of the packing. After making required repairs and adjustments, new gaskets were used and the tops put on. Dixon's Graphite mixed with cylinder oil was used in this connection, and when it was advisable to remove them again later on, the tops could be lifted off just as if no packing at all had been used, and by marking the tops so that they could be replaced properly, the joints were all tight when they were put back and the bolts replaced.

Now I suspect that somebody who is real smart will say that the gaskets I used were composed of material that differed from that put in by the manufacturer, hence the superior results obtained were due to this fact and Dixon's Graphite had nothing to do with it. This is a very good point and will be squarely met.

The graphite was put on one side only of the gaskets treated, the result of which was that each of them was cemented to the base as shown in Fig. 3, as graphite was not used here, but it was put on the top of gasket, hence the top came off freely.

Another point to be considered is that one of them was put together entirely without graphite and when I found it necessary to take this trap apart a few weeks later, the gasket was necessarily destroyed in the process, although all of them were made of the same material. As this is an actual experience it proves conclusively that Dixon's Graphite is entitled to all of the credit for saving material and labor in this case.

### HIGHLY PLEASED.

#### A Test of Dixon's Flake Graphite.

An engineer in charge of an Ohio steam plant writes us:

"I am highly pleased with the results of the test. Dixon's Flake Graphite No. 2 entirely overcame the 'howling' in the cylinder caused by the friction of the piston head. I have always had some heat in one of the pillow blocks, but one dose of Dixon's Flake Graphite No. 1 made quite a drop in its temperature.

"All engines, of course, have their ailments at times, but in the future I shall keep near me a quantity of Dixon's Flake Graphite to 'doctor' all engine troubles, and I shall recommend it to anyone who has engine troubles."

### A FRIENDLY LETTER.

Baltimore, Md., Jan. 24, '04.

DEAR SIR:—

Your samples, little book, also your letter of recent date received, for which thanks. Dixon's Graphite is nothing new to us, as we are using it and have used it for years with good effect, and I would not do without it. Seeing your little book advertised in the *Engineering News*, thought I would like to read it, and I find it very interesting. You will please accept my thanks.

Yours,  
(Signed) J. E. HENDRICKS

Erie Depot, Corning, N. Y., Oct. 23, 1903.

Your "Eterno" No. 2050 is, in my opinion, a first-class copying pencil, both as to plainness of copy and quickness of taking same with tissue on an ordinary wringer. Others require more time, making a press necessary.

A. N. BEACH.

West Saticoy, Cal., Oct. 19, 1903.

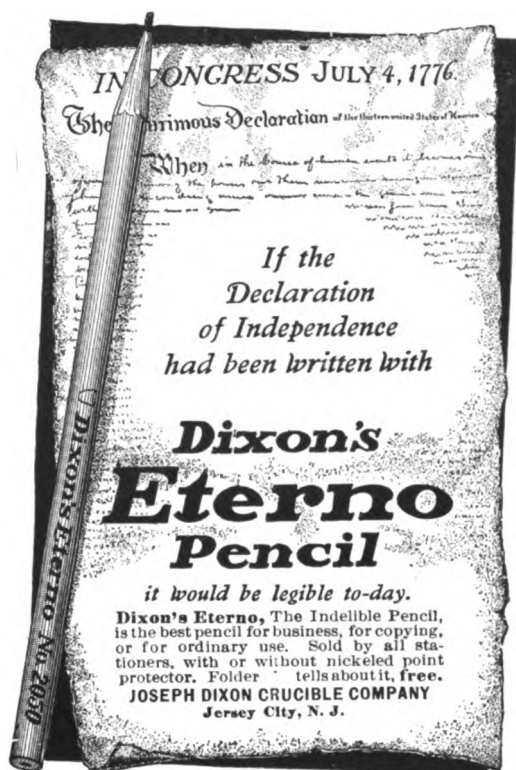
I am very much obliged for the copying pencil. I have had many of different makes, but I find this one the best, and surely it suits the requirements of a first-class copying pencil.

F. B. RAMIREZ.

ANY GOOD hand pump readily delivers Dixon's Flake Graphite, mixed with oil, to a valve, so that no elaborate devices or expensive changes are necessary to those who wish graphite lubrication either entirely or as an auxiliary.

There are many ways of feeding Dixon's Flake Graphite to cylinders.





STATE NORMAL SCHOOL.  
TRENTON, N. J.

I think Eterno meets the requirements of a first class copying pencil. —J. M. GREEN.

393 Eagle Street, Buffalo, N. Y.

According to your request I find sample pencil all I would desire and especially suited for my purpose—clean color, smooth action and durability of texture.

—DAVID ANDERSON.

New York, October 23, 1903.

Acknowledge receipt of Dixon's Eterno Copying Pencil No. 2050, and consider it indispensable to business men, and in fact to men of all professions.

—J. M. FITZPATRICK, 231 E. 81st Street.

THE dust of mills and shops does not so readily gather upon belts treated with Dixon's Traction Belt Dressing, simply because it does not make a belt sticky.

Elasticity, pliability and cling are the distinguishing features of Dixon's Tracting Belt Dressing.

Every little slip of a little belt counts up in the power wastes of a big plant.

Every little application of Dixon's Bar Belt Dressing counts for the better condition of the belt and stop of the slip.

MORE THAN one fire in a textile mill has been traced to a bearing that has been run so hot as to ignite the oil which should have lubricated it.

Excessive heating is impossible in the presence of Dixon's Pure Flake Graphite, and a great reduction in friction follows wherever it can be introduced.

## Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, type-writer work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing.**

**Dixon's Plumbago for Powder Glazing.**

**Dixon's Plumbago Foundry Facings.**

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite.**

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Automobile and Bicycle Lubricants.**

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Motor Chain Compound**, for perfectly lubricating transmission chains.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians.**

Special circulars with detailed information sent on request.

# Graphite

VOL. VI.

JUNE 1904.

No. 7.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

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## DIXON'S WIRE ROPE GREASE.

By R. A. BROWN.

The condition of a rope for the best results, should be free on the outside from any tar or other coating. To begin with, when a rope is new, a manufacturer will probably have filled it, if it has a hemp core, with some coating of his own, which usually included graphite. Amongst English manufacturers of steel cables for hoisting, it has been acknowledged for a long time that a rope is better laid upon a hemp center. This, however, is not always done, as many ropes are made on the requirements of the people who are going to use them. Taking a rope when it is new, and allowing it to take up as much pure graphite grease as it will from passing over a slotted box or any means which itself suggested at

the time of putting it on with convenience, it will gradually fill from the outside until it will find its way around every strand, and find lodgment in the center.

Once a rope is filled this way, it will then offer the least wear to the strands when passing over the sheaves. In mines carrying very heavy loads, as on two compartment shafts, there is a great deal of pressure and friction upon that section of the rope that is at any time on the outside of the sheave in passing over. That is where many practical rope men believe the greatest wear takes place, and that is where Dixon's Wire Rope Grease gives off its greatest benefit.

In mines having very bad water, containing acids, the action of this water on an unprotected rope would cause oxidization, and if not attended to will commence its work of disintegration. Once this oxidizing commences on the inner strands, it is then impossible to remedy it by any subsequent covering from the outside, and from the time that oxidization commences, the tensile strength of the rope commences to decrease.

When a rope is covered in this manner an additional fifty percent to its life, above the normal, is obtained.

In covering a rope with any preparation containing low grade plumbago, no benefits are obtained from the proportion of plumbago that is in the general mass. This low grade stuff always carries impurities in it which are

associated in the formation of the mine from which it comes, and impossible to separate. These impurities are usually gritty substances like the country rock or walls from which the graphite is taken, the whole mass is discolored by the presence of the plumbago in it, as for instance a little ink will discolor a large quantity of clean water. By this means, many are deceived in the use of cheap plumbago for any lubricating purpose. The impurities become dry and crack as earthy matter will, and perish soon, leaving no results from the little plumbago in the mixture. If there are any sulphuric acids in mine water it is imperative that *pure* graphite should be used in the grease, for the mine ropes. Pure graphite in other ways is known to withstand the action of many acids. Once properly filled by Dixon's Wire Rope Grease, it requires little attention afterwards to keep a rope properly covered, the usual greasing the work requires being quite enough.

Many coal mines, copper mines and gold mines where the water is exceptionally bad, give evidence that Dixon's Wire Rope Grease has proven the very best ever offered for this service.

## AMERICA AND THE INDUSTRIAL DEVELOPMENT OF THE WORLD.

America has a great destiny to perform in the industrial development of the world. She can perform it only by applying to every part of the machinery of production, transportation and exchange the principle of the greatest economy of effort to obtain the greatest sum of results. The opportunity for every man to rise by his talents from the lowest to the highest place, the right to reap and hold the rewards of one's labor without excessive taxation or vexatious visitation, the privilege of transferring property on the stock exchanges without the fetters imposed on such transactions in Europe, and the freedom to extend new methods of economy and combination in trade and finance across the continent, untrammelled by local tariffs and state boundaries, are among the weapons which give our country its great advantages in dealing with older competitors.

—*Science.*

## A GOOD STORY.

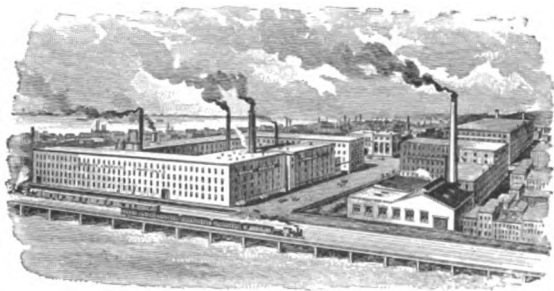
From "Uncle Dud."

A travelling man died on the road, and a friend wired his house asking for instructions as to what to do. The firm wired back—"Search him for orders—Ship his samples back to New York and notify the police to take care of his body."

ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

### BRANCHES AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Morigen (Switzerland), Finland, Havana.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., June 1904.

### BOILER SCALE.

To prevent the solid attachment of boiler scale to boiler plates, a coating patented in Germany by J. Smit, Leenwarden, Holland, is said to prove effective. About equal proportions of train oil, horse tallow, mineral oil and zinc white, are thoroughly mixed with a portion of graphite and lamp-black, water and some carboic acid being added until a paintlike consistency is obtained. For instance, we use 1 kilo train oil, 1 kilo horse tallow, 1 kilo paraffin, 1 kilo very finely ground zinc white, 1.5 liter of rain water, 4 kilos of graphite, 1 kilo of lamp-black, and 0.1 liters of carboic acid. The horse tallow combines with the zinc oxide to produce a strongly adhesive soap, very hard to melt. The paraffin prevents the penetration of the feed water, and consequently of the scale. The lamp-black and graphite lend the necessary consistency. The boiler scale can be detached by simple tapping with a wooden mallet.

—*Brewers' Journal.*

### AN INTERESTING CASE OF CHAIN LUBRICATION.

A correspondent writes us:

"I have used Dixon's Graphite for many years and keep it 'ready' all the time. I know of one use for it which I have never seen any account of.

"At a place where I was employed, they had a pneumatic crane which was used very much, its principal duty being loading and unloading car wheels and axles—a pair of wheels in position on the axle. A chain was used for a

hoist. This chain was made up of half-inch round iron and had to pass around five sheaves and they were obliged to put in a chain every three months.

"The foreman asked me if anything could be done to stop the wearing away of the chain so rapidly. I advised him to mix Dixon's Graphite with light oil, so it would flow freely and apply it with a paint brush liberally, and this was done, and the last I knew of it the chain had lasted two years and the man who cared for the chain was happy."

Those in the past who used Dixon's Cycle Chain Lubricant and those of the present day who are using Dixon's Graphite Compound for automobile chains, know of the great value of graphite as a chain lubricant.

### MEXICAN VS. AMERICAN GRAPHITE.

The other day a dealer in engineers' supplies said to a Dixon representative that a certain engineer complained that his graphite was not working right and was playing the mischief. The dealer took the engineer's word for it that it was Dixon's, but the Dixon representative had a talk with the dealer and the dealer then found out exactly what graphite the engineer was using and found that the man was using Mexican graphite. The engine was running hot in its bearings and indeed there was trouble wherever the Mexican graphite had been used. The engineer took the sample of Dixon's Graphite the dealer had offered him, experimented with it for a little while and found that it cooled the bearings and within a half hour everything was running nicely.

This reminds us to say that some twenty years ago a certain party tried to market what is known as German graphite, an amorphous graphite in which there is a large percentage of clay, and a graphite very similar in appearance and in nature to the Mexican graphite.

The German graphite caused a great deal of trouble and made a strong prejudice against the use of graphite for lubricating purposes.

Dixon's American Flake Graphite is a thin, tough flake of marvellous smoothness and toughness. It forms a veneer-like coating on the bearing surface, prevents cutting and is the best solid lubricant known to theory or practice. The Mexican and German graphites form a mud-like paste, possessing the smallest amount of lubricating value and containing sufficient grit as a rule to ruin most bearings to which the paste is applied.

### "TIC-A-TOC" AND GRAPHITE CUP GREASE.

We are frequently asked in letters if we make a high grade grease compounded with Dixon's Graphite which will make an excellent lubricant for engine crank pins, which are difficult to keep cool.

The Dixon Company is using what is known as the "Tic-a-Toc" cup made by Messrs. James L. Robertson & Son of New York City, with Dixon's No. 2 and No. 3 Cup Grease mixed. For economy and efficiency we know of no better combination, and our engineers would not for a moment think of returning to the old system of oil cup and oil.

## PHILADELPHIA BRANCH OF THE JOSEPH DIXON CRUCIBLE CO.

The Joseph Dixon Crucible Company, of 1020 Arch street, has again been compelled to enlarge its quarters and increase its facilities. It has taken part of an adjoining building, and in addition has completely remodeled its office and salesroom; and for convenience and general attractiveness the place of business is now unsurpassed by any wholesale house in Philadelphia.

The extraordinary success of the Philadelphia branch of this company deserves more than passing notice. Not so many years ago, a small store and three individuals were sufficient to carry on the business. At present, it takes a large corps of bright and active young men, with a large office and salesroom. This branch is under the supervision of a Philadelphian, William J. Coane, to whose progressive management Philadelphia owes the rapid growth of this business.



WILLIAM J. COANE.

The Dixon Company is the inventor of the Black Lead Crucibles, but it is better known to the general public as the manufacturer of the world-famous Dixon's American Graphite Pencils and the celebrated Dixon's Silica-Graphite Paint. It manufactures graphite products for every known purpose, and throughout the civilized world there is hardly an industry, or man, woman or child that does not use its products in some form. It is the largest concern in the world of its kind, the factory plant in Jersey City covering  $3\frac{1}{3}$  acres and consisting of 22 buildings. Aside from this it owns its own graphite mines in Ticonderoga, New York, which are well known to the scientific world for the unrivaled quality of flake graphite they produce. At Crystal River, Fla., it has large cedar mills, which prepare the wood for its pencils. It has branch offices in Europe, Asia, Africa and Australia.—*The Philadelphia Real Estate Record and Builders' Guide*.

## HE POLISHED THE NAILS WITH DIXON'S STOVE POLISH.

In his "Reminiscences for Hardware Men," at the banquet of the Nebraska Retail Hardware Dealers, Mr. Euclid Martin told how he treated a keg of nails that had been soaked in water "until there was simply a keg full of red streaks of rust." He said:

"Now, in those days the price of a keg of nails was an important factor to me, and I did not want to lose so much. I therefore decided to black them. I emptied them upon the floor and proceeded to mix them up with Dixon's Stove Polish, after which they were put in the nail bin with other ten-penny nails and weighed out in small amounts to customers. About the time the nails were all out my customers commenced coming in with packages of nails, saying "those nails I got of you the other day were all greasy and they were of no account." I readily took them back and gave them other nails, and it seemed to me before these nails were finally disposed of that I had weighed out and exchanged a carload of nails. The joke was too good to keep and was told by myself and got into the local papers, and finally ended up with the story that I had one of my clerks polish the entire keg of nails one at a time."

## GRAPHITE CLASSED WITH GOLD.

The engineer in charge of a large drawbridge across the Harlem River, New York City, pointing to a 10 lb. can of Dixon's Pure Flake Lubricating Graphite, said to a Dixon representative, "that red labeled can from your Company contains "black gold"—every engineer treasures it above all other engine room supplies. Ten years ago I used it with uniform satisfaction in the lubrication of cylinders. I mix it with linseed oil for plastering the caps of boiler tubes, and never have a leak. I also use Dixon's Graphite Greases and Dixon's Silica-Graphite Paint on the boiler fronts and the stacks, and they give most excellent service. All of your graphite products for the engine room can be depended upon by reason of their perfection in quality. The use of the "black gold" saves the commercial gold for my employer."

## PEN AND PENCIL.

"I," began the pen on the reporter's desk, "I am mightier than the sword. Of what use are you, pray?"

"Well," replied the editor's Dixon blue pencil, "to make a long story short."—*Philadelphia Press*.

## SET THE RIGHT MAN TO DO THINGS FOR YOU.

"If you want a thing well done you must do it yourself." This was once a popular proverb, and it may have been a very wise rule at some remote period. But it won't work now. It has outlived whatever usefulness it may have had. It cannot be successfully applied in this age of big combinations. It would be fatal to all great modern enterprises. In fact, it never could have had any more than a limited application since the days "when Adam delved and Eve span." To be of any use at present it should be amended to something like, if you want a thing well done you must get some one who knows how it should be done to see that it is done properly.—*Retailer and Advertiser*.

## ALL PENCILS AND NO INK.

According to *People* of Philadelphia, ink became a scarce commodity in the colliery offices of the Susquehanna Company on the first of the year. An order was made replacing ink with copying pencils which, it is said, are now used for all clerical work.



## PLUMBAGO IS WHAT?—

Misrepresentation Might Be Misleading.

By F. S. H.

Once a verse was written—somewhat as follows:—

“In the days of the Ichtyosaurus,  
Those wonderful days of yore,  
When the air was C-O-two,  
And water, H-two-S-O-four.”

Graphite may have occurred even under worse conditions when the only “graft” in sight was a quarter in the moon.

The air, heavy laden with carbon dioxide, fit only for saurians and trees, with old ocean hot and “riled up,” and possibly full of Epsom salts, is it any wonder that old carbon was king and the diamond his queen, while graphite, a refractory prince of the royal blood, was a chip of the old block?

No matter what Hoyle says, we always find graphite, alias “plumbago” and “blacklead,” standing ace-high at the court of king carbon and queen diamond, with soot and charcoal as right and left bowers respectively.

We would like to include coal, but he’s a joker—sort of a hybrid full of hydrocarbons, and really not so pure a breed as charcoal.

For the sake of what’s coming, let’s call graphite plumbago.

The origin of plumbago might better be understood were it possible to go back a million years or so. What’s the use—our lungs wouldn’t stand it!

There is a vague impression that decayed vegetable matter had something to do with it (canned goods were unknown); that it was produced in a manner analogous to anthracite, but through greater heat and pressure became transformed to nearly pure carbon.

We know that graphitic carbon can be produced in other ways, as from a hydrocarbon gas like acetylene; or by segregation of carbon from cast iron; or by transforming coke in the electric furnace.

Hence, the diversity of opinion, although, now-a-days, scientists are trying to explain the origin of things by putting all the blame on radium.

It’s a downright shame to compare a brilliant, black, opaque substance like plumbago with the beautiful, transparent, crystalline diamond.

Certainly, no gentleman would offend his lady-love by offering a plumbago engagement ring in lieu of a Maiden Lane “Sparkler,” although plumbago, especially in thinly laminated forms, may be just as pure in carbon as the diamond.

Scientists state that the diamond when ignited in a current of oxygen will burn brilliantly with the formation of a gas known as carbon dioxide—the same kind of gas which produces the froth on beer or the bubbles in vichy and seltzer; and that the *ash*, consisting mostly of silica and ferric oxide, which is always left, varies from 0.2% to 0.05% of the gem.

Practically the same thing occurs when we burn or oxidize the purer forms of plumbago. At least one specimen in the Dixon laboratory assayed 99.8% carbon, the ash being hardly visible to the naked eye.

Somebody has had the nerve to state that plumbago “is not so pure as the diamond”—but that “the diamond, nevertheless, is changed into plumbago when subjected to the intense heat of a galvanic battery.” It is assumed that no matter how hot the battery becomes, the change takes place without imparting any impurity, since the diamond cannot impart that which it does not possess.

And thus, we are constrained to believe that plumbago may occur just as pure as the diamond, and every time a customer buys a Dixon crucible he is getting diamonds in another form.

If we could only reverse the reaction and recover the diamonds from the plumbago, what a demand there would be for old pots!

Plumbago incombustible? Oh, yes! In comparison with coal!

A plumbago crucible will outlast forty different coal fires—but then crucibles do gradually wear out through oxidation and rough treatment, so that the demand for them usually taxes the supply.

Of course, plumbago occurs widely distributed—Ceylon, Mexico, Canada, Siberia, Japan, say nothing of Ticonderoga and Jersey City. Some of it may even repose in the depths of old ocean.

It is found in the backbone of our continents, in the oldest rock formations—much older than the coal measures—and has withstood the ravages of time, a fact which proves its remarkable stability.

With its sub-metallic lustre and unctuous properties it should not be mistaken for coal.

It happens that the name plumbago is derived from the Latin “plumbum,” meaning lead—because both substances produce a mark on paper.

But metallic lead will melt in the flame of a candle,—while plumbago fuses only in the terrific heat of the electric arc.

Incidentally, it may be remarked that a plumber is a man who is familiar with “plumbum” and candles, but who usually lacks an intelligent appreciation of the virtues of plumbago.

Mica is no friend of plumbago—simply a chance acquaintance. Whenever associated, the product is generally useless.

The Dixon product from Ticonderoga is remarkably free from mica and will average 85% to 90% graphitic carbon, which is the average for Ceylon plumbago.

The latter is, however, universally preferred for crucibles, and although certain specimens may attain a purity of 98%—yet, a careless manufacturer, indeed, is he who would permit any “oversight” in his factory on that account.

It may not be amiss to state that the Dixon Company is producing the best all-round crucibles on the market to-day.

Other manufacturers appreciate this fact keenly and are forced to advertise their goods twice as much. One prominent concern in hasty fashion resorts to a wild flow of rhetoric, a regular symphony in prose, claiming that their crucibles “express the maximum amount of strength in make-up, and practically never “skelp”—a perfectly safe statement to make.

As a rule, crucibles express a minimum amount of poetry and motion, and only a lively crucible could "skelp."

If the word "skelp" means to kick or run or bound, then the Dixon pot has accomplished these feats.

1st.—It has kicked other pots out of the market.

2nd.—It always runs well in quality and number of heats—a saving "in the long run."

3rd.—It has bounded into popular favor as the most economical pot on the market to-day—economy in time, fuel, metal, and ultimate cost.

Lo! The poor Indian, he can both skelp and scalp!

But, the Dixon crucibles *rarely* "scalp," as the expert potter might say when speaking of clay ware, the surfaces of which sometimes flake off through unequal expansion.

And thus, the manufacture of plumbago crucibles has become one of the most important branches of the ceramic industries, requiring the best workmanship and the most careful selection of raw materials.

But, what of the Ichtyosaurus—

Who lived when the earth was all porous?

He fainted with shame

When he first heard his name,

And departed a long time before us.

### PRACTICAL POINTS ON PIPING.

By W. H. WAKEMAN.

To the casual observer it seems to be a very simple matter to lay out a job of piping, then to screw the pieces together and put them in place, but it is not always as simple as it appears. Appropriate sizes of pipe and the right kind of fittings and valves to give the best results in practice must be selected.

A good steam fitter seeks to make tight joints on all the steam pipe he puts up, but as a rule he makes no calculations in regard to taking down those pipes, but the engineer in charge of a steam plant knows that in some cases at least, he must take down lines of steam pipe in order to make changes and improvements, therefore he tries to make the joints in a way that will admit of taking them apart without breaking the fittings.

The first time that I put pipes into a shop for steam heating purposes, I used nothing but oil on the threads, and when tested there was not a leak on the job. The philosophy of this is that as the threads were well lubricated, friction was reduced to the lowest possible point, therefore as the pipes were forced into the fittings they made up "iron to iron", so that there was no chance for leaks. I did not expect to take them apart, and I cared little about who did have the disagreeable job, so long as I was not engaged in it.

Heat from the steam quickly drove out the oil, rust soon took its place, and when changes were to be made it was necessary to break the fittings, then buy new ones.

Several years ago I piped a portion of the plant now in my charge and as I intended to run it after it was finished, care was taken to exercise foresight in the matter. One indication of this was found in the fact that I secured a can of Dixon's Flake Graphite, mixed cylinder oil with it, and used it on all of the threads. The consequence was that when a pipe was screwed into a fitting it was thorough-

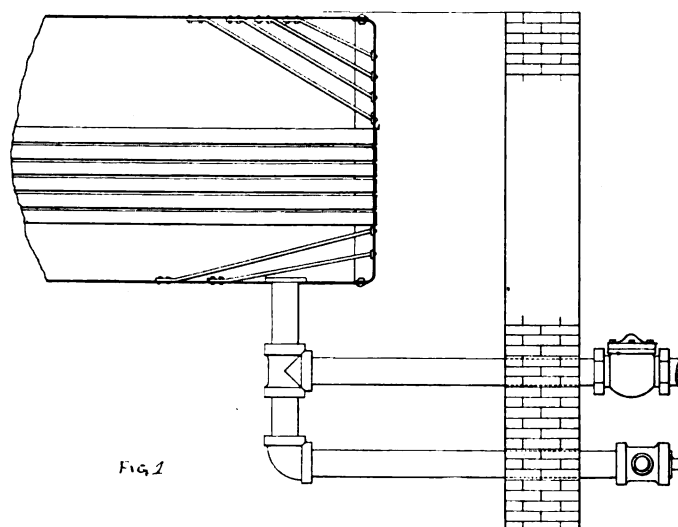
ly lubricated, therefore the wrought iron and the cast iron were brought together except that a very thin coating of the graphite remained between them to prevent corrosion.

When steam was turned on there were no leaks, and it is comparatively an easy matter to remove a pipe if it is necessary to do so.

After cutting off a piece of pipe with an ordinary wheel cutter, have you ever noticed how the area is reduced close to the end? On the job above mentioned, the end of every pipe was either reamed or filed until it showed the full area required.

Of course this was a tedious job, but you understand why it was done, do you not? Yes, certainly it was because I intended to use those pipes after the work was completed. It is not claimed that such work is necessary, for it is not, but it is better to have all pipes the full area called for. If a tapering reamer is used the labor is very much less than where only a half round file is available.

Unless graphite is used on the threads it is difficult to remove a steam pipe, but a hot water pipe, (say the blow-off pipe on a boiler) is nearly as bad, for it becomes corroded in places. The blow-off pipes on one battery of my boilers are four inches in diameter, as illustrated in Fig. 1. Each



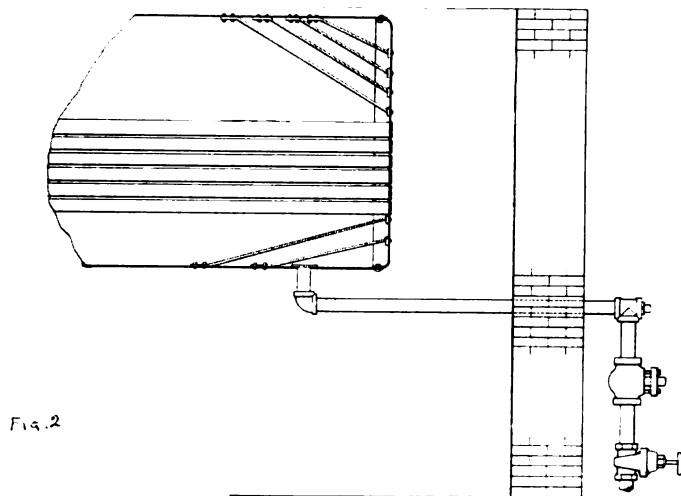
one extends down nearly to a level with the floor, then comes through the rear wall, terminating in a four inch reducing tee with a two inch side outlet. In the outer end of each tee there is a four inch plug, as shown.

It will be noted that the lower part of this large blow-off pipe forms a settling chamber into which impurities from the feed water find their way. When the blow-off valve is opened the greater portion of these impurities are blown out to the sewer, but still it is well to examine the inside of this pipe and see if scale is forming on it, as it is exposed to a very high temperature. For this purpose the plug must be removed; but if red lead had been used on the threads it would have been practically impossible to take it out; my favorite preparation, Dixon's Graphite mixed with cylinder oil, was used to lubricate the rubbing surfaces, and it forms a permanent coating that prevents corrosion, hence the plug can be removed with comparative ease. By inserting a candle in the lower part of pipe and looking downward from the inside of boiler, it is possible

to see the whole internal surface of the vertical pipe, and the horizontal piece can be examined from the tee.

The large check valve above this plug opens outward and forms part of a patented boiler setting that gives very good results.

The blow-off pipe shown in Figure 1 is of rather unusual



design, but Figure 2 shows a very common form. It is two inches in diameter and after it comes through the rear wall it is fitted with a two inch tee, having a plug in the outer end as shown.

The object of putting a tee here instead of an ell is to enable the engineer to remove this plug and thus gain access to the long horizontal pipe, for the purpose of cleaning it. If this pipe is neglected until hard scale forms on the inside, it is sure to be burned off sooner or later, because the fierce heat evaporates the water standing in it, and as the feed water does not enter this pipe it is soon destroyed.

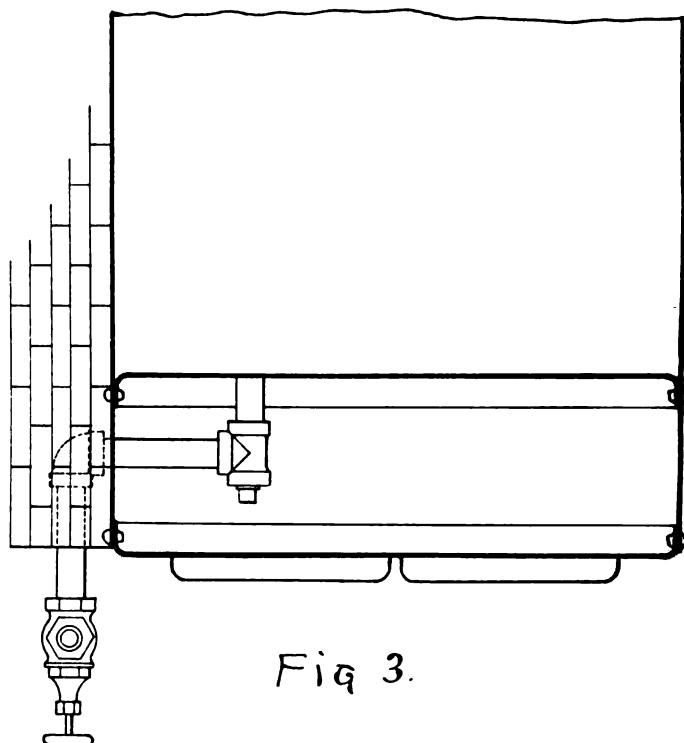
If red lead is used on the threads of this plug, it is very difficult to remove it and it becomes necessary to hammer the tee in order to loosen the plug. This is always a dangerous proceeding because it often cracks the fitting and this may not be discovered until steam is raised in the boiler.

As there can be no valve in front of this tee, and if there was it could not be shut in case of accident, it is not advisable to take any chances in the matter.

All of this danger is prevented by using Dixon's Graphite instead of red lead, for I have found that it makes it comparatively easy to remove a plug that has been so treated.

Figure 3 is a plan view of the front part of my tubular boilers. It shows a short piece of pipe screwed into the boiler head, followed by a tee looking outward, into which a plug is screwed. Another pipe is screwed into the side outlet of this tee, followed by an ell that is covered by the brick work, then a third pipe connects with the cross valve in the lower part of water column connection.

From this it will be noted that the plug is exposed to the action of very hot water on one side and the heat of escaping gases on the other. It has to be removed when the boiler is inspected and cleaned, in order to show the inside of this pipe, therefore something must be used on the threads to prevent corrosion. It is hardly necessary to state that I use Dixon's Graphite for this and that it answers every purpose.



The manufacturers of this graphite have a special preparation for use on pipe threads, and I am sure that it is all right, but these facts are given just as they occurred in my practice, and for years it has been my custom to keep a tin can of this article on hand and to use it for all suitable purposes as described in various articles which appear in this paper.

Another advantage gained by using graphite on pipe threads is that being a lubricant itself, if any of it finds its way into the steam cylinder of engines or pumps it will not cut or score them.

### THE LEAD PENCIL TEST.

EDITOR *Power* :—

In reading the mechanical papers I have several times seen statements to the effect that a good test for smooth running of an engine is to get it down so fine that a lead pencil will stand on end on any part of it, but I have never seen any specifications of the dimensions of the lead pencil that should be used. One that is 8 inches long and  $\frac{1}{4}$  inch in diameter will hardly stand on end on a table, and when I hear people tell about an engine running with so little vibration that a lead pencil will stand on end on it, I have visions of other lead pencils than the one described. A piece of the  $\frac{1}{4}$  inch pencil, 3 inches long, passes as a lead pencil and would probably stand on end on a great many engines, while one  $\frac{1}{2}$  inch in diameter and 3 inches long would probably stand up all right on "any old engine."

Anent the above the writer refers, very likely, to the lead pencil test made by the Winton people to show the steadiness and smooth running of the Winton automobile. We are advised that such a test was successfully shown and believe a regular Dixon pencil was used, and a full length one at that.



#### AN UP-TO-DATE METHOD.

We show herewith illustration of a huge crucible made by the Dixon Company for the Midgley Mfg. Company of Columbus, Ohio.

This crucible is used for brazing the Midgley tubular steel wheels and it represents an up-to-date development of the ancient art of brazing.

The crucible is the largest ever made by the Dixon Company and, we believe, is far larger than any crucible ever made before for any purpose.

#### PENCILS.

All lead-pencils have their uses, else they would not have been made. The use of some pencils is to sell them to those who do not know a good pencil from a worthless one. At the same time a good pencil, used for a purpose for which the maker did not intend it, may be a very worthless article, as for example a very hard and expensive drawing pencil used for making memoranda on soft paper. In order to get the right pencil into the right hands, the Joseph Dixon Crucible Company, of Jersey City, N. J., have prepared and published a pencil index describing the various kinds of pencils in the market and their special uses. You cannot think of a lead pencil question that it does not answer. Send a postal for one, and in doing so mention *SELF-EDUCATION* so that you may get a prompt reply.—*Self-Education*.

#### ENORMOUS DEPARTMENT STORE BUSINESS.

A Chicago store has shipped an entire church, complete from belfry to Bible, into the heart of Africa, on a simple mail order.

The transfer of cash from sales counters to the cashier's room in Macy's store, in New York, keeps in operation eighteen miles of pneumatic tubing.

The firm of Montgomery, Ward & Company has developed the mail order business to astounding proportions, forty-five girls, working ten hours a day, were three weeks behind recently in the simple act of opening the incoming letters.

John Wanamaker's Philadelphia store has under its roof the biggest book shop in the world, and has sold, in the past six years, ten million dollars' worth of an edition of a single work of reference.

The wagon delivery district of a certain New York store is over several hundred square miles in area.

Several years ago one day's receipts of Montgomery, Ward & Company passed the five thousand dollar mark. The other day the tabulated sheet at the close of a day's business showed

total sales of two hundred thousand dollars. Last year the sales sheets for the three hundred odd business days of the year showed average daily sales of sixty thousand dollars.

One store did a business last year of twenty-five million dollars, which is equal to the entire annual earnings of a great railway system like the "Big Four" or the "Wabash."

In Chicago one great merchant's gross annual receipts from a store combining wholesaling with retailing are forty million dollars.

On a Christmas-week day a quarter of a million shoppers enter a big store. To handle this immense business there are employed from five thousand to seven thousand persons.

The enormous growth of the department store business is the direct result of advertising—advertising that, by its volume and its distinctive type, has astounded the commercial world.—FRANK FAYANT in *Success*.

#### LINOTYPE GRAPHITE.

A linotype machinist writes us as follows:

"Replying to your letter of inquiry will say that I gave the samples of graphite a good test and found them fully up to your recommendation and at once placed order with Carpenter & Company. I find it far superior for cleaning mold mats and spaces. None other will do for me in future."



## PRACTICAL LUBRICATION OF ENGINE CYLINDERS WITH GRAPHITE.

The use of graphite as a lubricant for engine cylinders and pumps has received so much attention that its value and economy for this purpose are generally accepted, but the problem which has confronted most engineers has been the difficulty of feeding it satisfactorily. A great many engineers who have been troubled with wet steam and the condensation washing the oil from their cylinders and valves, have found a temporary remedy in graphite used occasionally by hand, and probably most engineers have at one time or another resorted to its use when oil alone did not produce satisfactory lubrication. But the use of an excessive quantity of graphite at irregular intervals often produces conditions as unsatisfactory as those which it is intended to remedy, and the best mechanical and economical results can only be obtained by feeding the graphite at regular intervals and in quantities adjusted to the requirements of the engine.

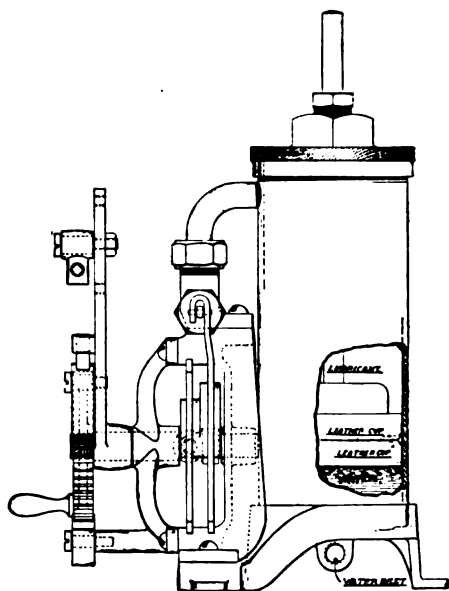


FIG. 1. SECTION OF GRAPHITE FORCE PUMP RESERVOIR.

For this purpose the Milwaukee Metal Working Co. has placed on the market a new pump or force feed lubricator which, it is claimed, will feed any lubricant from the lightest oil to the heaviest grease or mixture of graphite and oil. It feeds automatically, with positive force feed (which may be adjusted to the requirements of the engine) and without the possibility of accumulation or clogging at any point. This is accomplished by introducing boiler pressure back of the lubricant in the reservoir, Fig. 1, forcing the lubricant, even in the form of a heavy paste, to the pumping pistons, and by avoiding any form of check valves, or other points at which an accumulation of graphite might occur.

Fig. 1 shows the manner in which pressure, upon water of condensation, is introduced into the lubricant reservoir under a piston carrying double leather cups. This keeps the lubricant under constant pressure and forces it through the curved channel at the top of the reservoir directly to the pumping pistons. Fig. 4 shows these pistons about to

take in a charge of lubricant. The right hand piston, carried by the rear sliding frame, which in turn is operated by the larger part of the central double cam, travels independently to the right as far as the adjusting screw on this

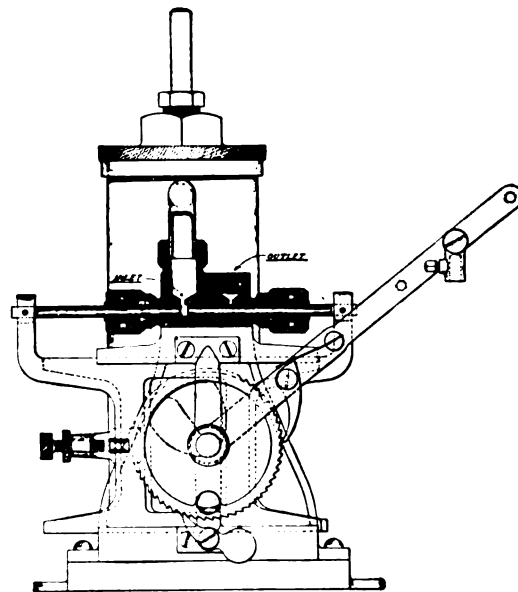


FIG. 2. VIEW OF RESERVOIR AND SECTION OF FORCE PUMP.

frame permits, and the space thus created between the pistons is filled by lubricant, under pressure, from the reservoir, Fig. 2. When the screw on the rear frame (seen at the left of Fig. 2) engages the front frame, the left hand piston, which is operated by the front frame, follows the

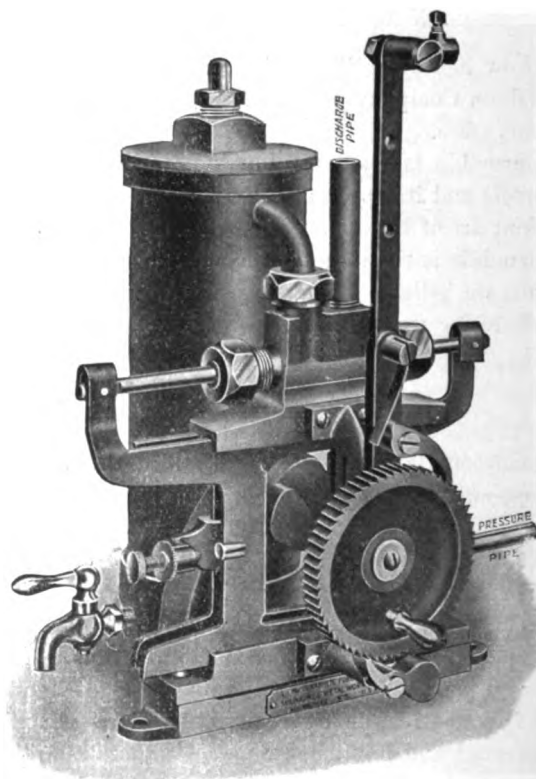


FIG. 3. ASSEMBLAGE VIEW OF PUMP.

right hand piston in its travel toward the discharge port, the two pistons remaining a fixed distance apart, Fig. 5.

When the discharge port is reached, the right hand piston remains stationary while the smaller half of the double cam engages the front frame and carries the left hand piston forward towards the stationary piston, forcing the charge of lubricant out into the discharge port, Fig. 6. The two pistons, abutting one another, are then carried back to the intake port and the operation repeated. No check valves are necessary, as the right hand piston closes the discharge port when the intake is open, while the equal pressure on both sides of the pistons effectually prevents any possible leakage around them.

While the lubricator has a positive pumping mechanism, this operates, practically, only as a measuring device, which takes a given quantity of lubricant under pressure at one point of the pump barrel and transfers it at practically the same pressure to another point. The lubricant, whether in the lubricator reservoir, between the pumping pistons, in the discharge pipe or entering the steam main, is always under practically the same pressure. What difference there is is caused by the decrease of pressure area on the upper side of the reservoir piston, Fig. 1, due to the rod running to the open air through the top of the

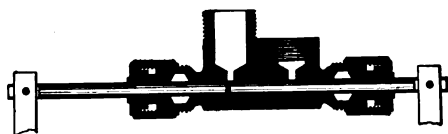


FIG. 4. PISTONS AFTER CHARGE IS EXPELLED.



FIG. 5. PISTONS AT THE INTAKE BEFORE TAKING IN CHARGE.

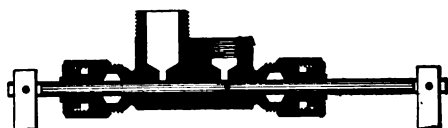


FIG. 6. PISTONS AT DISCHARGE PORT WITH CHARGE.

lubricant reservoir, and this difference puts the lubricant in the top of the reservoir under slightly more than boiler pressure and would force it into the engine cylinder without any pumping mechanism. The pistons alternately permit and check this flow and the quantity of lubricant allowed to enter the cylinder at each stroke is accurately and easily regulated by the adjusting screw on the rear frame, which regulates the distance between the pistons when taking in a charge.

As the equalized pressure makes the only duty of the pump that of overcoming the friction of its own working parts and the friction between the lubricant and the pipes, its period of usefulness is greatly lengthened and the possibility of wear or breakage reduced to a minimum. In the multiple-feed pumps, each feed is regulated separately and independently and on all pumps there is positive indication of the quantity of lubricant fed at each charge, of the quantity fed in any given interval of time, and of the amount in the reservoir.

The apparatus before being placed upon the market was put in actual service, under the heaviest duty, in several power plants for a period of two years, and both the mechanical and economical results were highly satisfactory. In every instance graphite was used, and the chief engineers reported a great advantage in quality and saving in cost of lubrication over that obtained by using oil alone. The saving varied from 25 to 50 per cent. in actual cost of lubrication, the variations being occasioned by the difference in the percentages of graphite and oil used. The device is manufactured by the Milwaukee Metal Working Co., of Milwaukee, Wis.—*The Engineer*.

#### THE VALUE OF A GOOD, SOFT LEAD PENCIL.

Mr. F. P. Rowe, principal of the Clark School, Mobile, Ala., writes us as follows:

"Samples of your lead pencils received. They are surely an excellent lot—the softer one making shades almost equalling the original cut.

"I had a special lecture this A. M., the subject being, 'The history of a Lead Pencil.'

"One of my boys said his father would sell no other pencil in his store, 'The Mobile Stationery Co.' The value of a good soft pencil was impressed upon their minds.

"I have loaned the pencils to my Drawing Class for experiment as to their preference."

#### GOOD WORD FOR PIPE JOINT COMPOUND.

The chief engineer of a well-known Western mining company writes us:—

"Our pipe line 2200 feet long, 750 feet head of water (well casing screwed), air and gas lines all over and not one leak, speaks well for Dixon's Graphite Pipe Joint Compound."

#### POT LEADING LEAD BEARINGS.

Lead linings of bearings will last much longer if they are "pot leaded" with Dixon's Flake Graphite. That is, if their surfaces are thoroughly rubbed with graphite so that the microscopical irregularities are filled with the smooth, tough and enduring graphite.

#### BURNED BY EXPLODING STOVE POLISH.

Was Pouring Mixture On Stove When Can Exploded.—Neighbors Put Out Flames.

The following comes to us from a local paper:

Annie Tryanaske, sixteen years old, is in the Newark City Hospital suffering from serious burns caused by the explosion of a can of stove polish. The girl had started to polish the stove and poured a little of the liquid polish on it. It ignited, setting fire to the remainder of the can, which she held in her hand. An explosion followed, and the burning fluid was scattered over her clothes and around the room.

Some of the other tenants of the house heard her scream and quickly put the blaze out by wrapping her in blankets. The fire in the room was quickly beaten out. The girl's right arm was burned as far as the shoulder, and her neck and breast were severely burned.

# OUR LONDON PAGE

All Communications, Inquiries, Etc., relating to this Page should be addressed to Joseph Dixon Crucible Co. (Geo. W. Wollaston, Mgr.), 26 Victoria St., S. W., London.

## IN THE MATTER OF PRICE.

"Your graphite is very good, but the price is much too high."

So read a "short and sweet" note received the other day from a firm to whom we had sent sample and quotations. This particular firm manufactures phonograph records.

Now, it happens that the previous day we were talking to another firm in the same line of business, who also had tried our graphite and then ordered a stock for regular use. They stated that if our graphite was double or treble the price they would still buy it. The quantity of graphite necessary on a record is infinitesimal. But note the result of using inferior material, such as this firm previously had.

Suppose they pay a noted artiste a whole heap of money for a song, and then, owing to bad graphite, the record is defective and, for all practical purposes, useless? This has happened time and again.

So it is with machinery.

The use of graphite is, in the first place, a huge economy; it reduces the oil bill, prevents trouble with hot bearings, and improves the lubrication all round. The use of Dixon's Pure Flake Graphite means a saving of 50 per cent. Yet when, in the natural course, imitations spring up at less money, some false economists "go for them" and subject their expensive and delicate machinery to unknown perils in the shape of grit and other deleterious substances due to an imperfect state of purification.

When the lubrication—such as for cylinders of blowing engines, &c.—does not call for the highest, purest form of graphite, we can supply cheaper qualities at competitive prices. But you take it from us that for general machinery there is no graphite equal in purity and lubricating qualities to Dixon's Ticonderoga Pure Flake Graphite, and none so economical all round.

It's not the initial expense, but the results that tell.

## TO OUR AGENTS.

We have started this page in the hope of furnishing useful and interesting items respecting our graphite products as in use here. We solicit your kind co-operation, and shall be pleased at all times to hear from you.

Dixon goods are good, solid goods that stand the test of time. We have customers on our books now that were customers when we first started here. They were not easy to secure then, but graphite is better known now and well established. It is well worth exerting yourselves a little with. We wish you every success.

## RESOURCEFULNESS.

An enterprising Yankee came over to England and decided to open a stationer's shop in Newcastle-on-Tyne. He obtained premises next door to a man who also kept a shop

of the same description, but was not very pushing in his business methods, preferring to jog along in the old conservative way. The methods of the Yankee, however, caused the old trader to wake up, and, with the spirit of originality strong upon him, he affixed a notice over his shop with the words, "Established fifty years," painted in large letters. Next day the Yankee replied to this with a notice over his shop to the following effect: "Established yesterday. No old stock."—*British and Colonial Printer and Stationer.*

## OUR LATEST AUTOMOBILE AD.

**SAVE THE CAR**

By using Dixon's Graphite Lubricants, which are the result of long experience, many experiments, and the co-operation of leading motor car manufacturers.

Booklet Free.  
JOSEPH DIXON CRUCIBLE CO.  
26, Victoria Street, London, S. W.

**GET SPEED**

## A TRYING PAINT TRIAL.

Recently we were invited by an engineer in charge of some large works in Kent to inspect some material upon which our paint was applied in August, 1902. The material consisted of a lot of structural steel submerged in a river, into which the waste water from a number of paper mills and chemical works drains.

The paint has been subjected to the action of this water highly charged with acids and chemicals.

The engineer states that he previously never had any paint last longer than two months on this job. But Dixon's Silica-Graphite Paint was found to be in practically the same condition as when applied—eighteen months previously.

## STRIKING FIGURES.

Now read the following:

### COST OF LABOR:

Red Oxide.....7/4 per 100 yards super.  
Dixon's Graphite Paint...5/10 " " "

### COVERING CAPACITY:

Red Oxide.....100 yards super. took 33½ lbs.  
Dixon's Graphite Paint... " " " 12 lbs.

These are very striking figures. They give the result to tests made on some important work in London to determine the relative costs as between red oxide and Dixon's Silica-Graphite Paint. We invite everybody to send for further particulars.



### **MAIN BUILDING, A. B. SEE ELEVATOR PLANT, JERSEY CITY.**

Jersey City's unrivaled shipping facilities by trunk lines and water routes, has attracted many manufacturing concerns from New York and Brooklyn, and the new plant of the A. B. See Elevator Company on Pacific Ave., Jersey City, will replace this concern's Brooklyn plant.

The ground area allows future extensions to the buildings now being completed, consisting of the main building, 460 by 250 feet, with a testing tower 85 feet high, with a 15 ton overhead crane running the entire length of the building. A switch of the Central Railroad of New Jersey runs through the main shop, and over a coal vault at its end. The powerhouse is 35 by 75 feet, with a brick smoke-stack 125 feet high. The loading shed is 135 by 35 feet, and the cold storage building 75 by 30 ft. Electric power is used throughout.

The plant as it stands costs over \$200,000, and was designed by a prominent architect of Jersey City, Mr. John T. Rowland, Jr. The buildings were erected by Wm. L. Crowe, general contractor, No 287 Fourth Ave., New York City. The structural steel work was supplied by the Hay Foundry & Iron Works, Newark N. J.

Dixon's Silica-Graphite Paint, Natural Color, was selected and used for the priming coat, and Dixon's Olive Green for the finishing coat, in protecting the structural steel work of all the buildings.

The appearance and protective qualities of this paint proved highly satisfactory to the owners, architect and builders.

### **ROOF PAINTING.**

A prominent manufacturer of Boston, Mass., sends us this unsolicited endorsement of Dixon's Silica-Graphite Paint, for tin roof protection.

"The graphite paint which we had from you five years ago for our tin roof and which was used at that time, was reported by our painter to be "as good as new," and that

a new coating would not be required, but last year we put on another dose. We recommend this to any party wishing paint for roofs."

We have records covering the use of this paint in different climates, and will be glad to give full particulars as to its use.

### **ACTUAL ECONOMY.**

Steel poles, roofs, tanks, bridges, buildings and smokestacks, painted at this season of the year with Dixon's Silica-Graphite Paint, will not require repainting for many seasons.

### **BOILER FRONT PAINT.**

The heat-resisting qualities of Dixon's Silica-Graphite Paint, Black, ready mixed for use, are well demonstrated in the following letter from a large tile manufacturing concern in Ohio.

"Twelve years ago we had some of your graphite paint which we used on our boiler fronts. During this time they have been repainted twice with your product, and they are in splendid shape. We certainly are very much pleased with the paint. The paint was of a very dark grey, almost black. We have just completed three large new boilers and wish to paint the fronts and breeching with the same paint.

"Will you please let us know the different sized packages you put this paint up in, and also the price. We wish to do this job of painting, and also keep it on hand for touching up from year to year."

We have a very interesting little circular on "Protection of Heated Surfaces," which will be sent upon request.

### **A GOOD PAINTER AND A GOOD PAINT**

are necessary for successfully preventing the destruction of steel and ironwork by rust. We invite correspondence on the subject of preservative paints for all classes of metal construction.

# PROMINENT STRUCTURES

**Their Steel Work Painted with Dixon's Silica-  
Graphite Paint to Protect Against Rust.**

Belmont Hotel, New York City.	Mutual Assurance Building, Richmond, Va.
St. Regis Hotel and Apartments, New York City.	Seelbach Hotel, Louisville, Ky.
Knickerbocker Hotel, New York City.	Kentucky and Indiana R. R. Bridge, Louisville, Ky.
Broadway Tabernacle, New York City.	Germania Bank Building, Savannah, Ga.
Algonquin Hotel, New York City.	Alma Cement Co. Plant, Wellston, O.
Marie Antoinette Hotel, New York City.	Northern Boulevard Viaduct, Albany, N. Y.
Hotel Astor, New York City.	Midland Portland Cement Plant, Bedford, Ind.
71st Regiment Armory, New York City.	Sanitary District Bridges, Chicago, Ill.
Broad-Exchange Building, New York City.	National Steel Foundry Co. Building, New Haven, Conn.
American-Exchange National Bank, New York City.	City Hall, Newark, N. J.
Atlantic Mutual Insurance Building, New York City.	Edison Portland Cement Works, Stewartsville, N. J.
Mutual Life Insurance Building, New York City.	Henry R. Worthington Hydraulic Works, Harrison, N. J.
Home Insurance Building, New York City.	North German Lloyd Steamship Terminal, Hoboken, N. J.
Madison Square Apartments, New York City.	Hamburg-American Steamship Terminal, Hoboken, N. J.
French Hospital, New York City.	Babcock and Wilcox Co. Buildings, Bayonne, N. J.
Kuhn, Loeb Building, New York City.	Public Service Mile Elevated Structure, Hoboken, N. J.
No. 98 William Street Building, New York City.	A. B. See Elevator Plant, Jersey City, N. J.
Wylls Building, New York City.	Pennsylvania R. R. Elevated Structure, Jersey City, N. J.
Trinity Building, New York City.	Thirteenth Street Viaduct, Jersey City, N. J.
Willis Avenue Bridge, New York City.	Mercer Street Viaduct, Jersey City, N. J.
Child's Dairy Building, New York City.	Commercial Trust Building, Jersey City, N. J.
Aeolian Building, New York City.	Jersey City Library, Jersey City, N. J.
Boudoin Building, New York City.	Alaska Building, Seattle, Wash.
Standard Building, New York City.	Utah Cons. Mining Co.'s Plant, Salt Lake City, Utah.
Harvey Fisk and Sons' Building, New York City.	Hotel Jefferson, St. Louis, Mo.
61st Street and Madison Avenue Apartment, New York City.	Cuban Jai Alai Building, St. Louis, Mo.
Touraine Hotel, Brooklyn, N. Y.	Old South Building, Boston, Mass.
Standish Arms Hotel, Brooklyn, N. Y.	South Terminal, Boston, Mass.
St. George Hotel Addition, Brooklyn, N. Y.	Ticonic Suspension Bridge, Waterville, Me.
Williamsburg Trust Building, Brooklyn, N. Y.	Bellefield Dwellings, Pittsburg, Pa.
New York Dock Company's Warehouses, Brooklyn, N. Y.	Union Railroad Bridge, Pittsburg, Pa.
Hotel Lafayette, Buffalo, N. Y.	Wabash Station and Trainshed, Pittsburgh, Pa.
Bailey, Banks & Biddle Building, Philadelphia, Pa.	Merchant's Exchange Building, San Francisco, Cal.
Pennsylvania Building, Philadelphia, Pa.	Wells, Fargo Express Building, San Francisco, Cal.
Keith's Theatre, Philadelphia, Pa.	Mutual Savings Bank, San Francisco, Cal.
Girard Estate Building, Philadelphia, Pa.	Upham Building, San Francisco, Cal.
Wilmington Malleable Iron Works, Wilmington, Del.	Hayward Office Building, San Francisco, Cal.
Belvedere Hotel, Baltimore, Md.	Loan and Exchange Building, Columbia, S. C.
	U. S. Naval Buildings, Annapolis, Md.

**JOSEPH DIXON CRUCIBLE COMPANY,**  
**JERSEY CITY, N. J.**



# Graphite

VOL. VI.

JULY, 1904.

No. 8.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

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## "POT-LEADING."

Methods of Applying Graphite to the Bottoms of Boats.

In answer to your correspondent's inquiry as to the best method for pot-leading a racer, I would say that in this case, as in very many others, every sailor has his own ideas on the subject and follows his own methods. From time to time, authorities have laid down the rules and methods for applying a smooth coating of graphite to the outside of boat's hulls, and in general they are either one of two ways.

The first consists in mixing the desired amount of pot-lead with enough very thin shellac to give it a thin consistency. This is applied in a thin coating with a soft brush and rubbed with a cloth after it dries. Some times dry graphite is dusted over the varnished coat before it is thoroughly dry. If this

doesn't give an absolutely smooth surface, very fine sand-paper may be used to remove all irregularities.

The second method followed is to varnish the outside of the hull with a thin coating of shellac cut in alcohol, so as to give a slightly "tacky" surface, on which graphite is dusted through a thin cloth bag, or something similar, before the shellac is dried. This is then rubbed down with a rag or polished with a brush. In these two methods small areas may be treated at a time, so that the different coatings of shellac do not have a chance to dry before the graphite is dusted on, or else the varnishing may be done by one man and the dusting by another following him.

A well-known experienced chemist wrote to the Dixon Company as follows: "I think that a good effect will be obtained over the ground coat of Dixon's Silica Graphite Paint by giving the graphite paint when dried a quick brushing over with benzine and immediately dusting with graphite or pot-lead. Benzine evaporates very quickly, and the surface would be almost immediately ready for the polishing-brush. Benzine acts by softening the oil of the paint, thus causing the graphite to adhere, and had best be applied with a soft brush and as quickly as possible, so as to affect only the surface of the paint." Dixon's Silica Graphite Paint is itself very largely composed of pure flake graphite, and if this is used, as it may very well be, on the under body of yachts and launches it will provide

a permanent coating of graphite that is very durable, and may be occasionally rubbed up with pot-lead, and remarkable smoothness is imparted to the under body.

A prominent Western engineer, who is also a motor-boat enthusiast, recently ordered a gallon of Dixon's Silica Graphite Paint, natural color, and some pot-lead for his motor boat. We quote the following from his letter: "As my boat is built upon speed lines, and will be as nice as a parlor, I will make friends for you from St Paul to St. Louis, and when I beat a fellow launchman I will tell him, 'pot lead did it.'"—*The Rudder*.

## JOY IN KANSAS.

Engines and Pumps Work Easily on One-Quarter Former Quantity of Oil.

We have the following from Mr. R. C. Havenhill, engineer of lighting plant, City of Chanute, Kansas:

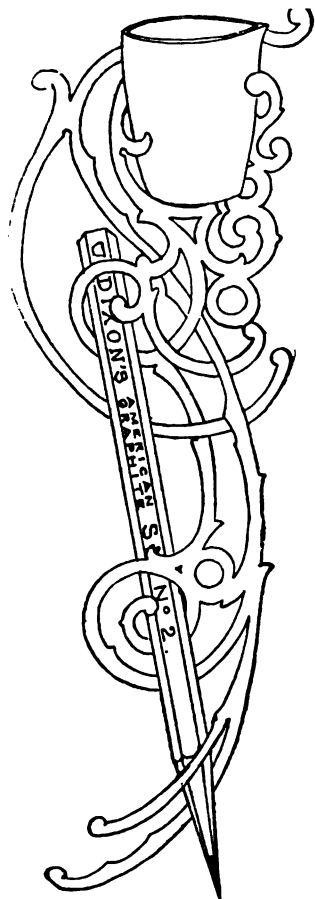
"We buy Dixon's No. 1 Flake Graphite—five pounds at a clip. I use it on my engine cylinders, occasionally putting it through the oil-pump. I believe I get more enjoyment out of its use on the boiler feed-pumps than anywhere else. By using a small amount of flake graphite, twice a night, the pumps work easily and run on about one-quarter the oil otherwise required. I also use a sprinkling of the flake graphite in my grease for governor bearings, and find that it increases the regulation of the engine."

## LUBRICANT FOR ROPES.

As a lubricant for Manila ropes, oil should not be employed, says the *American Machinist*. Flake graphite should prove satisfactory, but it ought to be applied in the spinning process. Cotton ropes ought to be very sparingly dressed with some composition, just sufficient being used to prevent fluffing. A much-used mixture is graphite and molasses or treacle, very little being applied at any one time. If an oiled rope becomes sodden and soppy, it may be remedied by repeated applications of powdered chalk to absorb the oil.—*Canadian Trade Review*.

It is hardly worth while to experiment with unknown belt dressings when Dixon's Traction Belt Dressing comes recommended by a record of twenty-seven years of good work in preserving leather belting. It accomplishes just that cushioning and softening of the fibre of leather that experts call "life."

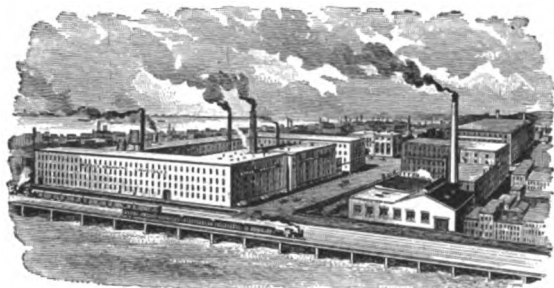
A WOMAN generally gains her point except when she tries to sharpen a pencil.—*Philadelphia Record*.



ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

### BRANCHES AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Horgen (Switzerland), Finland, Havana.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.

CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., July 1904.

### OUR LONDON PAGE.

We started out in our June number with "Our London Page." If it should peter out or lessen in quantity and quality, the explanation may be found in the following which comes from the London branch: "When copy doesn't arrive, it will indicate that there is barrenness in the land and in the office."

### "A HANDY PACKAGE FOR A TOOL-BAG."

This is what the Joseph Dixon Crucible Company styles a collapsible tube of Dixon's Graphite Pipe Joint Compound. This form is particularly useful for all small work away from the shop, or for those who have only occasional need for making threaded connections. This new package admirably fulfills every requirement for all work upon small fittings and, in general, wherever large quantities of pipe-joint compound are not needed. Indispensable to the kit of every machinist, engineer, plumber, steam-fitter, gas-fitter, automobilist, etc. Each tube is packed in a strong cardboard box. Cases of 36 and upward. Order by Trade No. 628.—*Mining World*.

### PROGRESS.

The secret of human progress lies in novelty. We cannot progress if we eternally keep at the same tasks. Prosperity means continued ambition, endeavor, zeal and progress.—From Commercial Leadership, in *Political Economy*, March, 1904.

### GRAPHITE AND SHELLAC FOR WOOD PATTERNS.

A manufacturing firm in the West use Dixon's Electro-typer's Graphite No. 649 with shellac to make a durable varnish for their wood patterns. Lampblack was formerly used, but graphite stands the hot sand far better.

### GRAPHITE SHOWS ITS MERITS.

Mr. W. B. Cannon, engineer at the Kansas City Gas Works, Kansas City, Mo., writes us: Here is a case where Dixon's Flake Graphite showed its merits: The crank-pin of the coal-gas-scrubber engine siezed during the night. It is impossible to take any light in the scrubber-room, except a safety-lamp. The engine was left till morning. As the engine is never shut down, except for repairs, I thought of Dixon's Flake Graphite. I loosened up the crank-pin box, put some graphite in and started the engine. The box ran warm the first day, but after that gave no more trouble.

### WAR AND THE COST OF WAR.

A million dollar-bills packed solidly like leaves in a book make a pile 275 feet high. One thousand million dollars, the price which Europe annually pays for armaments in time of peace, equal a pile of dollar bills over 52 miles high. This expenditure for the supposed prevention of war represents one thousand million days' labor at one dollar per day. This, be it remembered, every year to enable each nation merely to hold its own.

A second pile of dollar-bills over 52 miles high represents the annual payment for interest and other costs of past wars.

To these inconceivably large amounts must be added the earnings of the millions of able-bodied men in army and navy who are withdrawn from productive industries and are supported by taxed peoples.—*Geyer's Stationer*.

### DIXON'S GRAPHITE BRUSHES.

"Dixon's Graphite Brushes are entirely satisfactory" is about the wording of all the reports we are getting from those who have used the Dixon brushes. They are said to wear commutators less and to be superior in many ways to the brushes generally used.

### GRAPHITE IN THE AUTOMOBILE.

According to the *Automobile Review*, the transmission gear of the Duryea automobile is of the planetary variety. The slow speed clutch is a friction band 12 inches in diameter by 1 inch face, while the high clutch is a double cone 10 inches in diameter with 2½ inch faces, the inner ones being of brass and the surfaces permanently lubricated by graphite plugs. All bearings in this transmission gear are similarly lubricated so that oil is not needed and is detrimental.

### REMOVING GRAPHITE FROM EXHAUST.

QUESTION.—Please inform me of some device that will remove graphite from exhaust steam.

ANSWER.—We know of nothing better than a separator in which a number of baffles change the course of the steam abruptly. Separators of this description will be found on the market.—*The Engineer*.

## PACKING PUMPS.

By W. H. WAKEMAN.

A pump is one of the most simple contrivances to be found in a steam plant, yet it is hardly possible to find an engineer who has never had trouble with one or more of them. If a man claims that he has never found one that refused to work properly, it is proof that he has not had much experience as an engineer. This assertion may cause some of our friends who are now in charge of steam plants to take exceptions to our view of the case, but we may be right after all.

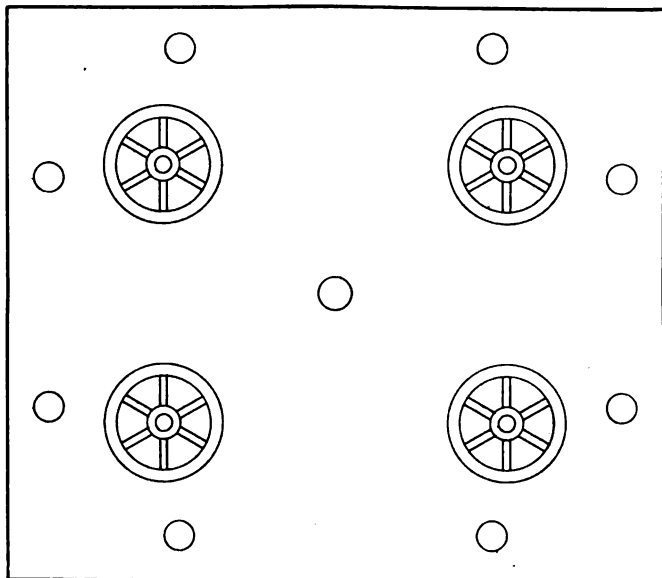


FIG. 1

Several years ago the writer had a pump that was fitted with soft rubber valves for cold water only. The water ports were fitted with guards in the usual way as illustrated in Fig. 1. One day this pump commenced to give trouble by travelling faster on one stroke than the other.

Of course everybody knows that a pump does not travel around the country, and this is not meant when we speak or write about a "pump travelling," as we only mean to convey the idea that the piston and valve travel back and forth.

When one stroke is made more rapidly than the other, it indicates that one water valve is out of order, and an examination of it proved that this was the case, for the pressure acting on the top of the soft rubber valves had forced a piece of one of them down through the space between the guards illustrated in Fig. 1, hence no water was delivered during one stroke. The fragment of a valve was in the shape of a piece of pie, and was cut almost as clearly as that delight of the small boy usually is.

In another case all valves on a duplex pump were out of order, hence all four of the strokes were about alike, and all were useless. The ordinary direct acting pump is designed as shown in Fig. 2, with the delivery valves above the suction valves, the two sets being separated by a cast iron plate which forms the seats of the former. From this it will be plain that in order to examine the lower and upper valves it is necessary to break two packed joints. I well remember the time when it was necessary to replace all

valves on a certain duplex pump already mentioned, for the packing held so firmly that a heavy hammer had to be used vigorously on a cold chisel in order to loosen it, and there was great danger of breaking this plate while driving in the chisel.

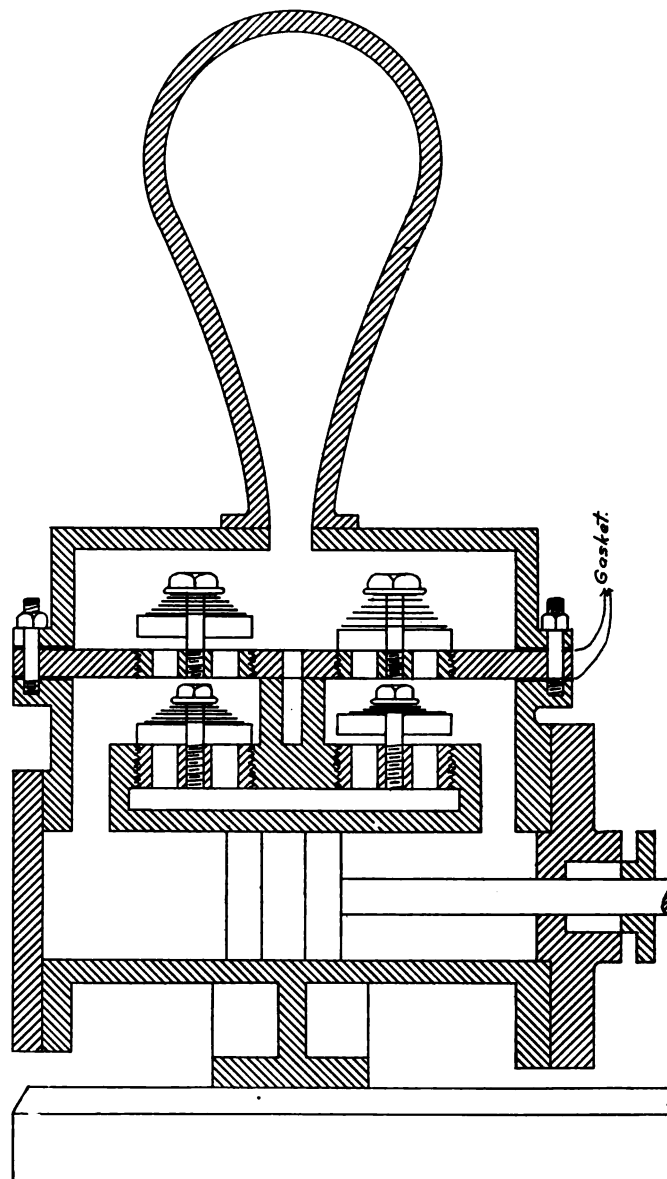


FIG. 2

Fortunately the packing "let go" before the plate broke, and the valves were made tight. It was next in order to clean packing off from four surfaces, so as to insure tight joints when new packing was put on. After this, two gaskets were cut out of sheet packing, and by referring again to Fig. 1 it will be seen that these are of irregular shape, and furthermore at some points not shown in the illustration, only a narrow strip of packing can be used, all of which helped to make a disagreeable job, for it must be remembered that a pump does not break down when standing idle, or in other words when there is plenty of time to fix it, but just when it is wanted badly, and as this one was used for pumping hot water it proved still more disagreeable, as the parts were not cool.

It is all right to have packing hold firmly, but if it adheres to one part of the flanges or plates to be packed it is just as good, (so far as practical service is concerned,) as if it stuck to both surfaces, and there is an important point in favor of the one surface theory, as the joint can be broken much more easily.

When this pump was repacked I took care to have the lower surface of the gaskets perfectly clean, but the upper surface of each was carefully covered with enough good cylinder oil, (I never use any other kind,) to make a thick paste.

When some engineers attempt to cover a gasket in this way, they succeed in touching nearly all of the surface, but leave a spot here and there. The packing is sure to stick at these points and when the joint must be broken again the gasket is ruined, the engineer loses his temper, and the whole plan of using a gasket more than once is condemned as impractical.

The only point that this proves is that if a job of any kind is worth doing at all it is worth doing well. More than one man holds a good position on account of doing his work thoroughly, when others of larger mental caliber, but of less careful disposition, are not wanted. The above remarks may seem to be a little "off the track," to some reader, but they are worthy of attention nevertheless.

The gaskets were replaced, the pump started and although those joints have been taken apart many times since, the same gaskets are still in use and are good for several years more. Now there is no trouble in taking the water end apart, for the packing does not stick on one side and, so far as practical service is concerned, I have a set of ground joints. When all things are considered they are superior to ground joints because there is less danger of causing them to leak, and when worn out they can be replaced much cheaper than the surfaces could be scraped and filed to a perfect metallic fit.

As already stated, these gaskets have been used many times, but the exact number is not on record. It is perfectly safe to say that the use of graphite has saved \$15.00 in this case alone, and a considerable saving of labor has also been effected.

Packing used on the cylinder heads of all pumps are treated alike with equal success and satisfaction.

The packing used on the piston rods of these pumps is thoroughly coated with graphite (Dixon's, of course,) and although some of it has a coating of this material when it comes from the store, it is always given another. This reduces friction on the rods, and makes it easier to take out the old rings when new ones are wanted.

Braided flax forms a very good packing, but it is improved by a good coat of graphite and oil well rubbed in, as it lubricates well and keeps the packing soft longer than it would be otherwise. Alternate rings of flax and canvas with rubber insertion forms an excellent combination.

If a hot water pump is fitted with complete metallic water pistons it will do good service, provided the water is perfectly clean, but much of the water coming from our heating systems contains grit and dirt that will destroy a brass piston, yet it is comparatively harmless to a piston packed with fibrous packing.

### MAN'S FAITHFUL FRIEND.

Some years ago, says the *Nashville American*, Senator Vest, of Missouri, attended court in a country town, and while waiting for the trial of a case in which he was interested, was asked by the attorney of a dog case to help him. Evidence was shown that the defendant had shot the dog in malice, while other evidence was introduced to show that the dog attacked the defendant. Senator Vest took no part in the trial, but upon being urged to speak, carefully scanned the faces of each jurymen for a moment, and paid this eloquent tribute to our noble friend:

"Gentlemen of the jury: The best friend a man has in the world may turn against him and become his enemy. His son or daughter that he has reared with loving care may prove ungrateful. Those who are nearest and dearest to us, those whom we trust with our happiness and our good name, may become traitors to their faith. The money that a man has he may lose. It flies away from him, perhaps when he needs it most. A man's reputation may be sacrificed in a moment of ill-considered action. The people who are prone to fall on their knees to do us honor when success is with us may be the first to throw the stone of malice when failure settles its cloud upon our heads. The one absolutely unselfish friend that a man can have in this selfish world, the one that never deserts him, the one that never proves ungrateful or treacherous, is his dog. A man's dog stands by him in prosperity and in poverty, in health and in sickness. He will sleep on the cold ground, where the wintry winds blow and the snow drives fiercely, if only he may be near his master's side. He will kiss the hand that has no food to offer; he will lick the wounds and sores that come in encounter with the roughness of the world. He guards the sleep of his pauper master as if he were a prince. When all other friends desert, he remains. When riches take wings and reputation falls to pieces, he is as constant in his love as the sun in its journey through the heavens. If fortune drives the master forth an outcast in the world, friendless and homeless, the faithful dog asks no higher privilege than that of accompanying him, to guard against danger, to fight his enemies. And when the last scene of all comes, and death takes the master in its embrace, and his body is laid away in the cold ground, no matter if all other friends pursue their way, there by the graveside will the noble dog be found, his head between his paws, his eyes sad, but open in alert watchfulness, faithful and true even in death."

Then Vest sat down. He had spoken in a low voice, without a gesture. When he finished the judge and jury were wiping their eyes. The jury filed out, but soon entered with a verdict in favor of the plaintiff for \$500; he had sued for \$200.—*Popular Science*.

### FORCEFUL RATHER THAN RHETORICAL.

A man given more to force of speech than smoothness and choice of words, heard a conceited young man speak of another of undoubted ability as crazy, and made the following reply: "Young man, if you ever get so much brains, when you ain't crazy, as that man has when he's crazy, you will have a damn sight more sense than you ever get so long as you live."

### DIXON'S LUMBER PENCILS.

At the end of most of the logs cut in this country are measurement marks made with Dixon's Lumber Pencils. Dixon's were the first pencils made for this special purpose, and when they came upon the market many years ago they filled a real want among the lumber people for a good marking pencil.

In black alone six varieties are made, suitable for green or dry lumber and the preference of the user for a square or hexagonal crayon. Some are paper covered and some are japanned to protect them from wet. These black crayons, like the Dixon pencil leads, are all made of the finest American graphite.

Seven bright colors are also made—brown, yellow, terra cotta, red, green, blue, and white. The pigments are the very finest obtainable, in most cases imported from the European color makers, and the colors are particularly vivid and permanent. These crayons are thoroughly waterproof and the marks unusually brilliant and strong and not easily rubbed off.

If there are any not familiar with these crayons, or who are interested in general-purpose or special-purpose pencils or crayons, the Joseph Dixon Crucible Co., of Jersey City, N. J., will gladly supply full information and send their catalogues and samples.—*Geyer's Stationer.*

### LUBRICATION OF AN AUTOMOBILE.

**Little Things That Help to Make the Running of an Automobile a Pleasure and a Success.**



Mr. Albert L. Clough recently delivered a lecture before the Young Men's Christian Association Automobile School, taking for his text the good old proverb, "An Ounce of Prevention." Mr. Clough said that a little care in looking after the working parts of an automobile was well repaid by freedom from troubles, due to a thousand and one causes, each in itself small.

On the subject of "Lubrication" he said: "The chief causes of damage to the mechanism, which may be removed by inspection, are the failure of the lubrication of some parts. Upon the lubrication of each working part of the mechanism depends its wearing power and even its operativeness, and too great care cannot possibly be taken in regard to it. The most important purposes of lubrication are: (1) To prevent overheating, abrasion and cutting. (2) To prevent wear. (3) To lessen the amount of power necessary for a given result.

"The cost of lubrication of an automobile is not a large item, but the liability of wear, due to the rapidly moving and heated parts, and the accumulating dust of the roadways, demand a lubrication that is smooth and comparatively dry—something better than oil or grease alone, and which will not catch and hold dust and dirt as readily as either oil or grease.

"If chains, gears, cams, rollers, valves, pistons, cylinders and a score of the other parts of an automobile that work, metal against metal, can be so lubricated as to greatly lessen the amount of wear and tear, a very great stride will have been made toward better things and the automobile will be assured a much longer and smoother life."

It is almost needless to say that where there is little wear there will be a very much reduced repair account and renewal of worn and broken parts.

Men of unquestioned authority in such matters have proved, by most searching and severe tests, that cutting of metal surfaces is impossible in the presence of pure flake graphite and that the natural wear of friction surfaces is greatly reduced. Therefore it is evident how significant is the well-known claim that Dixon's Pure Flake Graphite, used with wisdom and discretion on the different working parts of an automobile, will greatly lessen this item of depreciation and wear.

A special grade of flake graphite, known by its trade number as 635, is recommended for use on automobiles because of its delicacy, purity and exceeding fineness of pulverization of the flake graphite, which permits it to be introduced either dry or mixed with oil or grease, according to the needs of the several parts upon which it is used.

The Joseph Dixon Crucible Company prepares several graphite compounds especially adapted to the automobilist, such as Graphitoleo, which is a mixture of vaseline and Dixon's No. 635 Graphite. Graphitoleo is particularly desirable for small bearings, slides, and thinned down with oil it is used as a cylinder lubricant.

The Dixon Company also make a line of graphite cup greases of different densities, which are most excellent lubricants whenever cup grease can be used.

Dixon's Graphite Motor Chain Compound is especially recommended for the treatment of chains of automobiles. It greatly lessens wear and prevents the accumulation of dust and dirt.

### THE POWER OF USING BOOKS.

[President Arthur T. Hadley of Yale at Clark University.]

Men in every department of practical life—in commerce, in transportation, or in manufactures—have told me that what they really wanted from our colleges was men who had this selective power of using books efficiently. Anything which has been taught our college students as shop-work they generally have to unlearn at the beginning of their professional career. In any mere mechanical facility they find competitors without college training who surpass them in the details of execution. But if they know where to look for facts in books, and how to apply the teachings of those books to novel and difficult cases, their services are valuable from the first, and inestimably valuable as time goes on. The vision of such men is not confined to the single shop or group of shops; they have the whole world before them as a field of study and practice. Their ability is not that of the dexterous operative, who can do his ordinary work to perfection but tends to sink himself into the routine of that work; it is the ability of the industrial leader, equipped for any emergency that may arise.

SMART Hotel Clerk—"Now uncle, be sure and don't blow out the gas."

Rural Looking Guest—"Young man, should I at any time contemplate removing the light from my apartment by the means you suggest, I should expect to blow out the flame, not the gas."—*Pittsburg Post.*



### THE SCENES OF CHILDHOOD.

With what anguish of mind I remember my childhood,  
 Recalled in the light of a knowledge since gained;  
 The malarious farm, the wet fungus-grown wildwood,  
 The chills then contracted that since have remained;  
 The scum-covered duck-pond, the pigsty close by it,  
 The ditch where the sour-smelling house drainage fell;  
 The damp, shaded dwelling, the foul barnyard nigh it,  
 But worse than all else was that terrible well,  
 And the old oaken bucket, the mould-crust'd bucket,  
 The moss-covered bucket that hung in the well.

Just think of it! Moss on the vessel that lifted  
 The water I drank in the days called to mind.  
 Ere I knew what professors and scientists gifted  
 In the water of wells by analysis find;  
 The rotting wood-fibre, the oxide of iron,  
 The alga, the frog of unusual size,  
 The water, impure as the verses of Byron,  
 Are things which I remember with tears in my eyes.

And to tell the sad truth, though I shudder to think it,  
 I considered that water uncommonly clear;  
 And often at noon, when I went there to drink it,  
 I enjoyed it as much as I now enjoy beer.  
 How ardent I seized it, with hands that were grimy!  
 And quick to the mud-covered bottom it fell,  
 And soon, with its nitrates, and slimy  
 With matter organic it rose from the well.

Oh! had I but reckoned in time to avoid them—  
 The dangers that lurked in that pestilent draught,  
 I'd have tested for organic germs and destroyed them  
 With potass. permanganate ere I had quaffed;  
 Or, perchance, I'd have boiled it and afterward strained it  
 Through filters of charcoal and gravel combined;  
 Or, after distilling, condensed and regained it  
 In potable form, with its filth left behind.

How little I knew of the dread typhoid fever  
 Which lurked in the water I ventured to drink!  
 But since I've become a devoted believer  
 In the teachings of science, I shudder to think;  
 And now, far removed from the scenes I'm describing,  
 The story of warning to others I tell,  
 As memory reverts to my youthful imbibing  
 And I gag at the thought of that horrible well,  
 And the old oaken bucket, that fungus-grown bucket,  
 In fact, the slop bucket that hung in the well.

—*London Globe.*

### RAILWAY TRAIN DELAY.

Some Interesting Facts as to Cause and Cost of Train Delays and a  
 Means Suggested for Preventing Many of the Delays.

Very much has been said, from time to time, about the direct and also the secondary evils of train delays. Statistics show that more than half of the train delays are due to imperfect lubrication resulting in hot bearings, and of this half 55% are traceable to lubrication troubles on the locomotive. Hot bearings and other troubles always delay the locomotive on the road and, in many cases, send it into the shop for repairs.

A new phase of the situation was presented at a recent meeting of the Rocky Mountain Railway Club, in Denver, at which President Schacks made the following remarks in reference to the cost of hot boxes:

"Not only in waste and oil, but the expense of delay to traffic; the stopping of an engine working at high pressure. Such an engine, being suddenly stopped on account of a hot box, must necessarily blow off, having no use for the steam, and this blowing-off might continue for 15 minutes, perhaps longer, and for every second that an engine, at 200 pounds pressure blows off, there is a waste of  $\frac{1}{4}$  pound of coal." He further said that if a box were allowed to run hot, it would cost the company the price of 15 pounds of coal for every minute that an engine blows off, and laid emphasis on the necessity of guarding against such waste.

Owing to the peculiar nature of flake graphite, it is difficult to use it with any advantage in lubricating an ordinary axle journal bearing, although it has long been used, in an emergency, to cure hot pins, eccentric straps, sticking valves, laboring cylinders and squealing air-pumps.

Dixon's Pure Flake Graphite has long since made a record for itself and is relied upon by most of the railroad engineers of this country, not only as a never-failing remedy for trouble in emergencies, but as something which is to be used regularly and which will prevent the arising of any emergency.

### DIXON IN JAPAN.

Mr. Robert A. Brown, Dixon's representative in the East, writes:

"Steamers going home are crowded, as there are no Japanese boats running now and many are going to visit the St. Louis Exposition. War did not bother my affairs in Japan and, except seeing troops everywhere, there were no visible signs of anything out of the usual.

"The harbors are all mined. Our steamer was escorted both in and out.

"The first batch of war correspondents were permitted to move the day I left Yokohama, but they won't get very far."

### DIXON'S GRAPHITE COMPOUND.

*Joseph Dixon Crucible Company,  
 Philadelphia, Pa.*

Dear Sirs:—In answer to your letter of the 1st inst. would state that we have been using the Dixon Graphite Pipe Compound in all our steam operations for about three years, and up to this time we have had no complaint whatever, and we consider it a first-class article.

Yours very truly,

BARNES & ERB COMPANY,  
 Mfrs. Laundry Machinery.

THE *New York Tribune* tells us that it has now been demonstrated that carbon can be dissolved in melted silicates and afterward crystalized. Experiments have been conducted separately by Hasslinger, Ludwig, Luze and Friedlander. In some instances the product was that form of carbon which is known as graphite; in others diamonds, which were exceedingly small, but were genuine, resulted.

### HOW HE GOT A STRAIGHT TIP.

A prominent New York broker tells the following story at the expense of a Philadelphian: Some time ago Mr. W. gave a dinner, and at it were several Wall Street operators. W. is always on the lookout for market tips. As a rule he is rather cautious in his habits, but that night he dined a little too freely and awoke the next morning in a rather muddled condition. But he was perfectly clear on one thing.

Somebody had given him a tip to buy corn. Who gave him the information W. could not recall. He knew nothing of corn, or any other grain. But he went ahead and operated in corn with a vengeance, bought 200,000 bushels, and the price began to climb. Then he bought more. The shorts got scared, ran to cover, and on the final jump W. covered and cleaned up \$80,000.

That night he hunted up his guests and tried to find the man who had given him such valuable advice, but in vain. W. was becoming worried. His coachman drove him home, and as he stepped from his carriage his man said:

"Excuse me, sir, but did you order corn? Last night you promised to buy forty bushels. We're clean out, sir."

He gave the fellow a \$1,000 bill, saying: "Buy the corn and keep the change."—*The Philadelphia Public Ledger*.

### LEAD PENCIL WILL VALID.

Court Dismisses the Appeal of Alwine Heier Against Sister's Testament.

In an opinion handed down by Judge Ashman, in the Orphans' Court, the appeal of Alwine Heier, who endeavored to break the will of her sister, Henrietta Heier, was dismissed. Alwine alleged that the will, written in lead pencil, which left the entire estate to Emil Cutsche, a friend, was secured by undue influence.

The allegation rested wholly on the fact that the will was written in lead pencil by the beneficiary and was without witnesses. The court held that the will was valid.

—*Philadelphia Bulletin*.

### TO PREVENT RUSTING OF MACHINERY.

There are several formulæ for compounds to keep machinery from rusting. Take one ounce of camphor and dissolve it in one pound of melted lard; remove the scum; then mix with the camphor and lard as much fine graphite as will give it an iron color; clean the machinery well and smear with the mixture. After twenty-four hours rub off; then clean with a soft cloth.—*Mining and Scientific Press*.

### LUMBAGO CAUSES WARE TO VERSIFY.

Pension Commissioner Ware has fled for the South to take a much-needed rest. Before going he wrote the President a short note in lead-pencil characters as follows:

I take this piece of plumbago  
To tell you I have the lumbago;  
I shall hie me away  
For a week and a day,  
For I feel like a very bum Dago.

—*Washington Times*.

### TESTIMONIAL.

So. CHICAGO, Dec. 9, 1899.

*Joseph Dixon Crucible Company,  
Jersey City, N. J.*

Gentlemen:—Dixon's Pure Flake Lubricating Graphite has given us the very best of satisfaction, and produced the results you claimed for it.

We have had it in use on the air piston rings of our blowing engines which, when lubricated with other brands of graphite, gave us a great deal of trouble and, as we see now, was due entirely to the graphite failing to lubricate properly—the tendency being for it to pile or "cake" up, causing the brass and babbitt rings to run hot and the babbitt to fall out, which soon resulted in badly cut up cylinders.

The use of Dixon's graphite has entirely done away with this trouble and given a perfect lubricating surface to the cylinders, an extremely desirable condition and one that prompts us to say that where a perfect lubricant is required, there is nothing that equals Dixon's Pure Flake Lubricating Graphite.

Very truly,

ILLINOIS STEEL COMPANY,  
Per C. J. BARR, Master Mechanic.

### GRAPHITE AS AN AID TO CYLINDER LUBRICATION.

EDITOR OF *Engineer's Review*:

Considerable has been said for and against the use of graphite as an aid to cylinder lubrication. In practical experience I have found it to be a great help when used in small quantities.

I am at present in charge of a plant having a Corliss engine, 18x42 inches. There is no separator or drain on the steam-pipe, consequently the engine gets more or less water, as the steam-pipe is unprotected and the boilers are worked hard. As a result of this, water coming over into the engine, it became quite a problem to keep the cylinder and valves lubricated. As good cylinder oil, in liberal quantities, did not suffice, I tried graphite mixed with a little oil, forcing it in with a handpump. I found that by using a scant teaspoonful, two or three times a day, the groaning in the cylinder and valves disappeared and the engine ran much smoother than before, and that it also made a saving in the cylinder oil.

I think a great many engineers condemn the use of graphite in cylinders, from the fact that at some time or another they used too much on the packing rings, springs, valves, etc. Graphite is like medicine. A dose is all right, but an overdose is injurious.—M. J. A.

Dixon's Pure Flake Graphite overlays and glazes with a coating of remarkable smoothness and endurance the minute roughness of metal surfaces, thus attacking friction at its origin.

From various causes oil often fails to sufficiently reduce friction and trouble follows fast. 5% to 10% of Dixon's Pure Flake Graphite will enormously increase the duty of any oil or grease to which it is added, glazing every rubbing surface to mirror-like smoothness.

## USES OF FLAKE GRAPHITE ON SHIPBOARD.

### Lubrication of Thrust Bearings.

By H. E. RAABE, M. E.



Although the merits of graphite as a lubricant have long been recognized by many engineers, its progress into the engine rooms of steamships has been comparatively slow. The reason for this, however, is not the want of progressiveness among marine engineers, as it may appear to those who have used this most excellent lubricant extensively in station-

ary plants, but usually an unwillingness to take any risks whatever, or to try experiments. The stationary engineer has not had to be so cautious and, knowing that he had more opportunities for repair in case a bearing should run hot and melt out, he was not afraid to take slight risks and to experiment. After a short trial he would always find that instead of running any risk, he was doing away with all risk.

A hot bearing on board a steamer, however, is a different proposition than in a stationary plant, especially if it should occur during a gale under a lee shore, and for this reason most marine engineers preferred to wait until graphite lubrication passed the experimental stage before testing its value. By the term "experimental stage" it must not be understood that the quality of the graphite had to be improved, but that the best method of using it must be inquired into, and this could only be done by making actual experiments to prove the success not theoretically, but by actual facts.

The purpose of this article is to give the writer's experience with this lubricant on shipboard, so that marine engineers may benefit by it, without feeling any uneasiness about the results.

Every marine engineer knows what a bothersome part of the machinery the thrustbearing is, and good suggestions for keeping it cool are sure to be always welcome.

The first attempt the writer made to use graphite on a thrustbearing, was on a small high-pressure tugboat in East India some twenty-five years ago. The horseshoes as well as the collars were so badly cut from overheating, that it appeared to be a job for the repair shop. This was out of the question, however, as the boat had to remain in service. Having made some experiments with graphite lubrication before, the writer thought that a trial would make the condition of the bearing no worse and set his thinking powers to work, to find the best method of applying it. The first thought was to fill all the cuts in the collars as well as in the horseshoes with graphite. This was done by softening ordinary washing soap, mixing it with flake graphite to form a heavy black paste, which was thickly applied all over the surface of the bearing. Oil was then fed to the bearing moderately and at short intervals a mixture of soap and flake graphite was applied freely. After about an hour's run, the oil supply was stopped entirely, while the graphite application was continued and, to everybody's sur-

prise, the bearing kept perfectly cool throughout the entire run of about eight hours. That evening the bearing was again taken apart and the change that had taken place in it was marvellous. The cuts, instead of being ragged, and the surface of both collars and horseshoes, instead of having a dull appearance which the constant application of the salt water hose had caused, had assumed a perfect polish. It was decided then not to make any attempt to dress the bearing, but to repeat the application of graphite and soap, and to continue the same treatment during the next day's run. After about a week, the wearing surfaces of this bearing had acquired such a polish that it was decided to discontinue the direct application of soap and graphite and to depend entirely upon the amount of graphite that could be fed through the oil holes, the graphite still being mixed with soapy water, and applied to the bearing at regular half hour intervals. Of course, the oil lubrication was continued regularly.

Under these conditions the bearing behaved perfectly, the grooves caused by cutting had shaped themselves into a perfectly smooth-edged circle and all the extra deep cuts had been filled up with graphite, leaving a hard, smooth polished bearing surface.

Before going into further details, it may be well to say something about the especial idea of using soap with the graphite. When mixed with oil, graphite cannot be readily compressed into a solid mass, so as to permanently fill bad cuts and pits in bearings, as neither the graphite nor the oil is of an adhesive nature. On the contrary, both are very slippery, while the soap, mixed with the graphite, will form a cake which, when compressed, becomes quite hard and fills up all the uneven spaces in a bearing.

This experiment induced the writer to try another of the same nature with the thrustbearing. The brass liners from the horseshoes of a thrustbearing were removed, and similar ones made of Babbitt. These were well perforated with half inch holes, and the holes filled with a composition of graphite and soap, prepared in the following manner. The soap was first dissolved in sufficient water to form a liquid of about the consistency of cylinder oil; to this a sufficient quantity of flake graphite was added to form a paste about as plastic as red lead putty. The peculiar part of such a composition is that it will not crumble and fall apart, as the graphite would if mixed with oil, but it has a pasty nature which will firmly fill a cavity and remain there. The process of filling the holes with this paste was not quite such an easy task, but a good deal of pounding with a wooden set and mallet finally filled the holes compactly, so as to form a smooth, hard surface. The horseshoes were put back into their plates, and when the engine was started oil was fed very freely, accompanied by an occasional dose of graphite and soap water. This bearing never showed any tendency to heat, so the oil lubrication was finally discontinued entirely and a cheap grade of grease substituted, mixed with a small quantity of graphite and applied about four to five times during the day.

As a result of this successful experiment the Babbitt and graphite liners were left in place of the former brass liners, and, if the writer had had opportunity, a few more steamers at that station would have been fitted out that way.

The accompanying sketch, Figure 1, is an illustration of one of those thrustblocks.

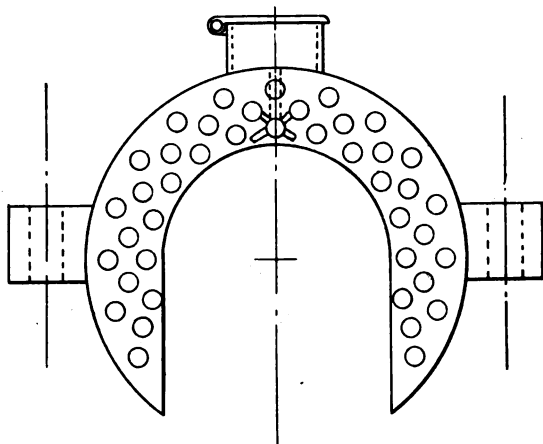


FIGURE 1.

Care should be taken not to drill too many holes in the liner, as the heavy pressure may crush it.

The thrust bearing is one of the hardest, if not the hardest bearing to lubricate, no matter what kind of a lubricant may be used. The principal reason for this will be understood by examining the diagrams, Figures 2, 3 and 4. In

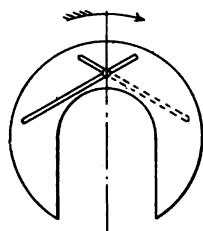


FIGURE 2.

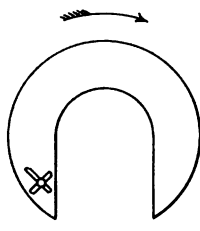


FIGURE 3.

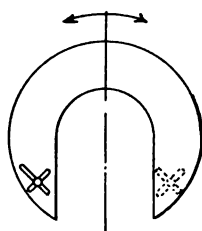


FIGURE 4.

Figure 2 the lubricant is introduced at the top, as near to the shaft as possible, but if the shaft is revolving in the direction of the arrow, it will plainly be seen that one half of the bearing surface is kept almost free from lubrication. In Figure 3 the oil is introduced so that it will have to traverse the whole surface, if the engine is running in one direction, and in Figure 4 the same is accomplished for the reverse motion as well.

In many cases the oil is introduced near both of the lower extremities, as in Figure 4, but although this is an improvement over the design of Figure 2, it still is not wholly satisfactory. Even with the modern thrustbearings, which are practically running in oil, a great deal of trouble is experienced, because the centrifugal force will not permit the oil to flow toward the center of the bearing.

Such difficulties can easily be overcome by the use of graphite, which can be introduced in the shape of a compound, made up of one part machinery oil, one part tallow and one-half part of flake graphite by measurement.

The tallow should be heated sufficiently to be easily mixed with the oil, and the graphite should then be added, and the whole mixture well stirred until cool. The best way to introduce this compound is illustrated in Figure 5.

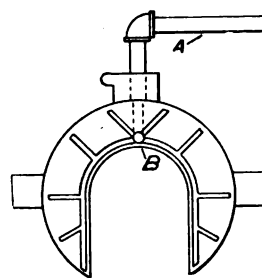


FIGURE 5.

The oil pipe (A) is connected to an ordinary compression grease cup and terminates in the aperture (B), Figure 5, and from this opening a groove is led around the shaft as near to the latter as possible. The opening has several branches radiating outward, as shown in the cut. It is needless to mention that the graphite compound therefore reaches every part of the bearing, and by keeping sufficient pressure in the compression cup, the lubrication is perfectly automatic.

The writer has applied this system to a 9 inch shaft, fitted with five thrust collars and has never had a word of complaint about the heating of this bearing.

The cost of this graphite lubricating compound is very low and every engineer can easily make it up in a very few minutes.

A ten pound can of Dixon's Pure Flake Graphite will last a long time and the lubricant can be used over again several times. Finally, after this compound has been used in the thrust bearing again and again, it will prove to be an excellent lubricant to use on the stern bearing where the shaft leaves the vessel. (A very successful method of lubricating this often-neglected part has been made the subject of another paper.)

The grooves in the horseshoes of the thrust bearing should be from  $\frac{1}{16}$  to  $\frac{1}{8}$  inch wide, according to the size of the bearing; the branch grooves need not be more than from  $\frac{1}{16}$  to  $\frac{1}{8}$  inch wide, and all of them should be of a depth equal to two-thirds of their width.

If the bearing has been so designed that the lower portion of the thrust-collars on the shaft dip into oil, such an arrangement need not be disturbed, as it does not interfere with the method of applying graphite, which I have described.

The proportions of the graphite compound given above apply only if a light grade of machinery oil is used to thin the grease. If a heavier grade of oil is used, more of it will be needed to keep the mixture thin enough to flow through the feed pipe.

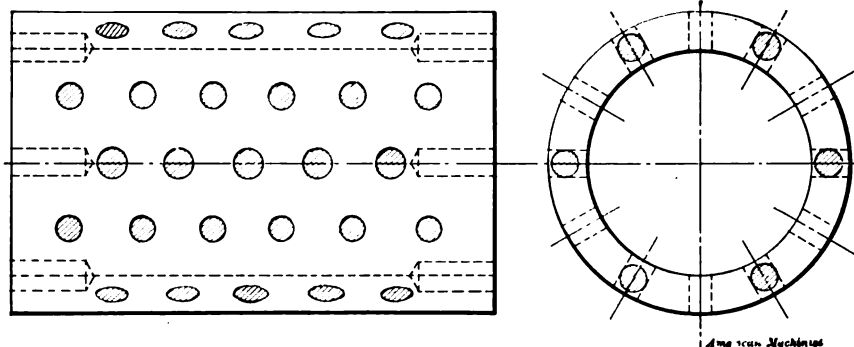
Ball thrust bearings are often used in small boats, particularly in gasoline launches and the so-called "motor boats," and the makers often call them "oilless bearings," this term being generally understood to mean that the bearing requires no lubricant. With such bearings the writer has made some tests, running them perfectly dry and also with a small quantity of the flake graphite compound, as above described, with results very much in favor of the graphite lubrication. The benefits are (1) cooler running bearings and (2) much less wear. It is well known that Dixon's Flake Graphite very largely reduces wear.

### BUSHINGS FOR HIGH-SPEED LOOSE PULLEYS.

By courtesy of the *American Machinist* we publish the following, which answers fully a number of inquiries received on this same subject:

EDITOR *American Machinist*:

To those who have had trouble with high-speed, loose pulleys, wearing out in the bore, I would recommend the scheme shown in the accompanying sketch. A brass, or preferably a phosphor bronze bushing, turned a driving fit in the pulley hub, is first drilled with 3-16 or  $\frac{1}{4}$ -inch holes,



staggered as shown, and the holes are then forced full of Dixon's No. 690 Graphite Compound. A small oil-hole should also be provided, as it is best to occasionally use a small quantity of oil which, with the compound, makes a paste which lubricates nicely, even though the shaft be slightly cut or uneven. Should the pulley heat, the mixture softens and lubricates without attention.

Bushings made as described and used on an emery wheel counter shaft, have run for more than a year with little wear, whereas those made of cast iron, brass and phosphor bronze, without the compound, had quickly failed.

The compound comes in sticks wrapped in foil. It is inexpensive, and the trouble avoided will certainly pay for the cost of the job.—H. E. B.

THE Joseph Dixon Crucible Company, Jersey City, N. J., is distributing an attractive booklet entitled "Dixon's Graphite Suggestions." The cover page of this booklet is embellished with a drawing in colors of several ancients marking on the wall with graphite. This attractive little booklet sets forth the advantages and indefinite diversity of graphite, giving a short history of the Joseph Dixon Crucible Company and its connection with American graphite, graphite pencils, crucibles, in the foundry, for lubrication, graphite for bicycles and automobiles, for power launches, pot-lead for yacht bottoms, for electricians' or domestic use, belt dressing, graphite paint, and as a pipe-joint compound.—*Electrical Review*.

SUPERHEATED steam means fuel economy of 10% to 25%. The use of superheated steam is largely limited by the lack of suitable cylinder oils to stand the higher temperatures.

Dixon's Pure Flake Graphite, unaffected as it is by any degree of heat, is of the greatest help to oils in solving this difficult problem in lubrication, economical in itself, and making great plant economies readily attainable.

### TO PUBLIC SPEAKERS.

Dixon's Graphite used in the correct proportion, say one cwt. sprinkled gently around the open sound-pit, lubricates the vocal chords and assures a steady, even flow of eloquence. N. B.—Idea patented. All rights reserved.

"WILLIE," said his mother, "I wish you would run across the street and see how old Mrs. Brown is this morning."

A few minutes later Willie returned and reported: "Mrs. Brown says its none of your business how old she is."

—*Chicago News*.

THOSE who are interested in the progress of things mechanical must needs keep abreast of the times on the all-important subject of lubrication.

The intelligent use of Dixon's Pure Flake Graphite renders possible a degree of duty for engines and machines that the weakness of any system of plain oil or grease lubrication make hazardous.

### THEY CONVINCED THE "BOSS."

PHILADELPHIA PA., Dec. 29, 1903.

Joseph Dixon Crucible Company,  
Philadelphia, Pa.

Gentlemen:—After a struggle we have convinced the "Boss" that Dixon's Flake Graphite is the only remedy. The amount we use speaks for itself. We wish you a Happy New Year and remain

Yours,

JOHN HAND,  
No. 3013 Salmon St.,

RICHARD TELL,  
No. 3469 Joyce St.,

Engineers at Dill & Collins Paper Mill.

The above letter is sent us by the manager of our Philadelphia office, who writes that we may consider it worthy of insertion in GRAPHITE. We certainly do. We have many times stated that Dixon's Graphite is a good friend of the engineers, and that the engineer is a good friend of Dixon's Flake Graphite. They both seem to work together nicely in convincing the "Boss" that no journals or bearings can run hot where there is an intelligent engineer and a box of Dixon's Flake Graphite.

### IT MAKES A DIFFERENCE.

Man wants but little here below,

When eating a la carte,

But when it's table d'hôte, he wants

It all, right from the start.—*Yale Record*.

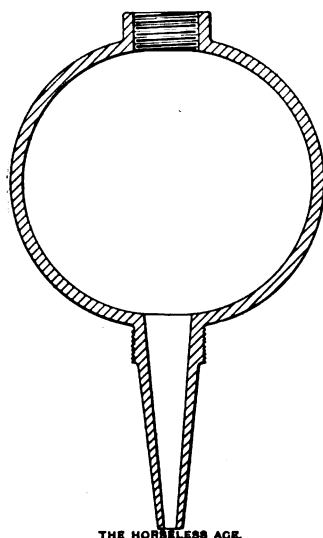
EMERSON has rightly said that "Man is as lazy as he dares to be." Therefore men will use the handy bar belt dressing when they won't go to the trouble of applying a paste dressing. They often let the belt slip a little, which they'd soon stop if there was a bar of bar belt dressing handy. Dixon's Bar Belt Dressing meets all requirements.



## GRAPHITE IN CYLINDER LUBRICATION.

In an article in *The Horseless Age*, the well known English engineer, Mr. J. S. V. Bickford, says:

"Graphite is said to be very good for cylinder lubrication.



The trouble is to get the graphite to the part at which it is wanted. If fed into the steampipe it is apt to collect in a little pile on the spot on which it falls. The best method seems to be to introduce it in considerable quantities at a time directly where required, and leave it to take care of itself. Graphite can be sight fed all right, and the lubricator is the simplest thing possible. Make a hollow metallic ball with a small conical tubular outlet, (see cut), insert this conical outlet into the steampipe, and you have an automatic graphite feeder. To make it a sight feed it is only necessary to insert a "bull's eye." This will only feed flake graphite, however.

"The whole problem of cylinder lubrication is yet to be settled, as well as that of cylinder oils, and when that solution is found, I am afraid the millennium will be near."

In *The Engineer*, of London, Mr. Bickford in speaking of graphite said: "I do not hold a brief for Dixon's people, but as far as I know they are the only people who have made a special study of graphite for lubricating purposes, and as I stated in a letter to *The Engineer* some time ago, I had some of this examined by burning off the carbon in a muffle. The chemist reported that the residue, which was not very much, seemed to be mica. Now, as mica is a good cylinder lubricant itself, when carefully prepared, it stands to reason that the above brand of graphite can be considered good for lubrication."

THE following gem, according to an English contemporary, is to be found on parcels of lead pencils exported to the United Kingdom from Bavaria:

"Stationery Hardware. Be careful not to be broken."

Yet this Bavarian pencil man is said to have a Londoner as his agent!—*American Stationer*.

A MAN named Frye has patented a boiler.

## Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, type-writer work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing**.

**Dixon's Plumbago for Powder Glazing**.

**Dixon's Plumbago Foundry Facings**.

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite**.

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Automobile and Bicycle Lubricants**.

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Motor Chain Compound**, for perfectly lubricating transmission chains.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians**.

Special circulars with detailed information sent on request.

# OUR LONDON PAGE

All Communications, Inquiries, Etc., relating to this Page should be addressed to Joseph Dixon Crucible Co. (Geo. W. Wollaston, Mgr.), 26 Victoria St., S. W., London.

## A LONG RECORD.

It is considerably over forty years since the superintendent of the Dixon mines at Ticonderoga first conceived the idea of graphite paint. He knew, beyond everyone else, the essential qualities of graphite:

(1) Its lubricating qualities. (2) Its elasticity. (3) Its absolute imperviousness to any degree of heat or cold, acids or other destructive or corrosive agencies.

He went immediately to work, prepared the first graphite paint and coated some tin and iron work about the mines. What were his first impressions?

Astonishment at the great covering power of graphite paint, due to the lubricating qualities of graphite, which caused smooth and easy spreading over a wide area. The fact that, owing to the elasticity of the graphite coating, it would not crack under the heat of the sun and the consequent expansion of the metal work; nor would it blister.

Durability was, of course, a test of time, but in a few years this also was proved to be greater than that of any paint previously in use.

So Dixon's Silica Graphite Paint was placed on the market. It went slowly but surely and crept into favor. In course of time its durability was proved with a vengeance. Five, ten and fifteen years, according to conditions of service, it lasted without renewal. In one instance that we know of, five-and-twenty long years of sun and storm were weathered, and still the paint was in good condition.

Meantime the world of painting began to realize that this inspiration of our mine superintendent had furnished the best protective coating ever known—no fantastic concoction of artificial ingredients, but a strictly natural product. Imitations sprang up; other graphite paints appeared and then another striking fact was demonstrated, viz: That only the thin, minute flakes of Ticonderoga graphite, dug from the Dixon mines, would adhere tight enough to metal surfaces to have the desired effect. The imitations were impotent and valueless. The demand for Dixon's Silica Graphite Paint became vast and general. Architects began to specify it; owners of steel and iron structures to realize its saving of trouble and expense of frequent repainting. Now its use is world-wide.

The mammoth office buildings of America, erected with a frame-work of steel—many tons of it, are protected with Dixon's Silica Graphite Paint. The largest bridges and the smallest iron gateways, corrugated iron sheds and gas holders, as well as interior and exterior decorative iron work, all pay tribute to its efficiency and rich appearance.

We in London are young and a long way behind, so far, but are making steady progress. At practically the same time we recently shipped cargoes of our paint to railway companies in India and Asia Minor and to a corporation of a South African city. We are constantly shipping to Holland, Belgium and most Continental countries, in addition to a rapidly growing trade in this country.

We claim only what we have proved. We prove all that we claim. Whether you are a small user; whether you have tons of structural steel, acres of corrugated sheds or merely a tin-roofed hen-coop, you will find no other coating to give such long and economical service as Dixon's Silica Graphite Paint.

## A COMPOUND STORY.

### I.

He came into our office. "I want," said he, "some of Dixon's Jointing Compound. Your traveler offered this to us and said as much about it that we ordered a trial tin, but our workmen wouldn't touch it. 'Always been used to red-lead,' they said. 'Can't work with stuff like that.'

"We got mad and raved; finally persuaded them to try it. And what is the result? Why, they won't look at red-lead now. They swear by Dixon's Compound. Another tin, if you please."

### II.

He came again to our office. "Your joint compound," he said, "is good stuff. We had half a contract putting in a large hot-water installation. We used your compound; other fellows, red-lead. We had several hundred joints to make and did it in fine style; never a leak at all, at all. We beat the other fellows by hours and now their joints are leaking like the deuce."

### MORAL.

You come into our office or go to your local dealer, order a tin of Dixon's Pipe Joint Compound, use it on all pipe-fitting work and, when overhauling machinery, daub a little of the compound on the shanks of bolts, flanges of cylinder heads, gaskets, nuts and wherever metal is fastened against metal. It will prevent rust and consequent decay. You will be happy ever afterwards.

## PREVENTS SLIPPING. INCREASES POWER.

Messrs. Hearn Bros., wholesale chair manufacturers, High Wycombe, write: "Respecting your Solid Belt Dressing, this is by far the best we have ever used, as we have tried several."

We know this firm has bought special dressings at one time and another and have used preparations of their own. The above testimonial, therefore, is all the more valuable as to the merits of Dixon's Solid Belt Dressing. We guarantee that it will prevent slipping and stop belts from slipping that have already begun. Put up in very handy and convenient one-pound bars.

## A NEW GRAPHITE LUBRICATOR.

We have had under notice for some time a new and what appears to be a perfect lubricator for feeding Dixon's Pure Flake Graphite into engine cylinders. It represents years of study in improved methods of graphite lubrication. We hope to give fuller particulars shortly. Meantime, if any of our readers are interested, we shall be pleased to pass their inquiries on to the manufacturers.

# Graphite

VOL. VI.

AUGUST, 1904.

No. 9.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

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## "GRAPHITE AS A LUBRICANT."

(Eighth Edition, Revised and Enlarged.)

The engineer who, hearing about the benefits to be derived from the use of lubricating graphite, searches his library and reference books for information upon the subject, will be greatly disappointed to discover how very few articles are available for his information. There are, however, few text books on lubrication that do not mention graphite, but their references are, in all instances, as far as we have been able to discover, only casual and do not in any way supply the information that would enable the engineer interested in the subject of graphite lubrication to supply himself with the necessary facts concerning its exact position in the mechanical world.

Not long ago, an engineer of our acquaintance wrote to an eminent testing engineer, with whom he had been asso-

ciated, asking where we might find comprehensive literature on the subject of "Graphite Lubrication." The reply that he received was to communicate with the Joseph Dixon Crucible Company, whose literature was the most authoritative published on this subject.

The graphite industry, as it exists to-day, may be said, with no exaggeration, to be marked by the growth of the Joseph Dixon Crucible Company, now in its seventy-seventh year.

Graphite for lubricating purposes, as used in some enormous quantities for so many different classes of machinery, has come into its present prominence very largely because of the progressiveness of the Dixon Company in placing within the reach of engineers the quality and grade of graphite which they can use even in very delicate situations. Thus the Dixon Company, from the earliest days, has been the headquarters for graphite knowledge.

The realization of these facts has been kept before us in preparing the eighth edition, revised and enlarged, of "Graphite as a Lubricant," a booklet of the Dixon Company, devoted to the subject of "Graphite Lubrication." We have aimed, throughout the chapters of this booklet, to set forth the most important points, not only of practice but of theory with respect to the exact action and value of lubricating graphite. There is no end to the chapters we might have filled by narrating the experiences of practical

engineers and mechanics with graphite, but we have endeavored to supply the chief facts so that an intelligent



idea of the subject might be presented to those who are seeking information.

We would be glad to place a copy of this booklet into the hands of every practical man interested in attaining better lubrication for machinery of every class. We know that the principle of using pure flake graphite as a lubricant is as sound as the results are satisfactory, and that only good can follow its judicious use.

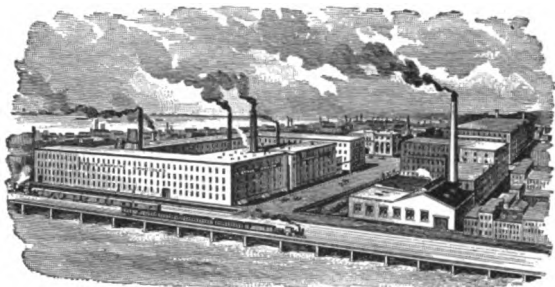
## GRAPHITE FOR BOILERS.

A correspondent writes us as follows: "We find that graphite is as useful in its way for the interior of boilers as it is in the form of graphite paint for exterior of boilers, such as boiler fronts, valves, pipes and iron work used in boiler setting.

"We paint the inside of our boilers to prevent scaling and know of other people who do the same, and we have seen samples of scales that were removed from a boiler where graphite had been used which showed a very thin and even scale, and the engineer who had the boilers in charge, claimed that it came off the tubes with very little jarring, and traces of the graphite can be plainly seen so that an argument that appeared in one of the trade papers sometime ago that graphite for the interior of boilers was 'detrimental,' does not seem to be in keeping with facts."

ESTABLISHED 1827.

INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J., U. S. A.

### BRANCHES AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Mergen (Switzerland), Finland, Havana.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.

CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., August 1904.

### A MACHINIST AND HIS PROBLEM.

He Solves It By Means of Thin Asbestos Mill Board and  
Dixon's Flake Graphite.

Not long ago one of our people was talking with an expert automobile machinist and he was told the following incident which will undoubtedly be of interest to our readers:

He was called upon to make a hurry repair on an automobile engine, the cylinder head of which leaked badly at the joint. He made no less than twelve unsuccessful attempts to pack this joint tightly; he tried rubber packing, sheet lead, paper, copper, tried painting the surfaces with red lead; tried to make a rust-tight joint with salt water; tried to corrode a copper gasket on tightly and tried several patent packings of one sort and another, but a lastingly tight joint could never be secured. Finally thin asbestos mill board was thoroughly painted with boiled linseed oil and a gasket cut from it. This was thoroughly coated with Dixon's coarse flake graphite and that did the trick perfectly.

This happened seven months ago, so the machinist told us, and the head has not leaked a particle since then. This same packing of waterproofed asbestos board, coated with graphite, has been pronounced by many practical engineers the very best flange-joint packing obtainable, as it resists the softening action of water or steam and allows a perfectly easy separation of the joint at any time without the slightest tearing of the gasket.

It is often a very good idea to coat the gasket with graphite on only one side and then the uncoated side sticks to its flange while the graphite allows perfectly easy separation of the joint without the destruction of the gasket, even though the joint be very frequently broken.

### LONGINGS.

When days grow long and summer heat  
Like a furnace glows on roof and street,  
When the leaves of the city's trees are dry  
And shrivelled beneath the burning sky,  
Nodding and dozing there comes to my brain  
The musical words of an old refrain  
That rings in my ears the livelong day,  
It is, "Over the hills and far away."

Where mighty trees cool shadows throw  
On mossy banks and ferns below,  
When the quail pipes in the early morn,  
As he leads his flock through rustling corn,  
Where the fishes leap in the river's tide,  
And under the roots of the willows hide,  
And, freighted with fragrance, soft winds play  
"Over the hills and far away."

The hum of the bee, that uneasy rover,  
As he gathers sweets from the purple clover,  
The robin's song at the close of day  
As twilight drops her curtain gray,  
To draw a long new breath of life  
Far from the city's noise and strife,  
And to hope that I may go some day  
"Over the hills and far away."

—LUCY M. STOCKING, in *St. John's Bulletin*.

### DIXON'S GRAPHITE AXLE GREASE.

"A Satisfied Customer."



The following little letter tells the story fully and completely:

J. C. FREDERICK,  
HARDWARE AND STOVES,  
104 West Main St.,  
OWENSBORO, KY., July 1, 1904.  
*Joseph Dixon Crucible Co.,  
Jersey City, N. J.*

GENTLEMEN:—Your favor of June 25th to hand and noted. I should be pleased to have you send me samples and circulars and will use my best endeavor to have them properly distributed. Whenever we can induce a customer to try your axle grease we find they will buy it again, although from a dealer's standpoint—"A pound of it really runs too many miles." Yet he has a satisfied customer.

J. C. FREDERICK.

"A SMALL point to remember in card etiquette is, that in adding a name to an engraved card, when it is desired to announce a second person, the inscription should be made with a pencil rather than a pen. This is a trifling nicety of form that denotes knowledge," says *Harper's Bazaar*. To this we can only add: Be sure, be quite sure, the pencil is a Dixon American Graphite.

### "THE THREE GUARDSMEN."

The Men Who Superintend the Mining and Milling of Graphite at Graphite and Ticonderoga, New York.

Two hundred and fifty miles from the seat of government of the Dixon Company are located the company's graphite mines and mills. The property is not far from Lake George and includes hundreds of acres of mine and woodland, besides buildings and machinery representing values amounting to several hundred thousand dollars.

Upon the shoulders of three men rests the responsibility for the successful and economical management of the graphite mines, the milling processes and all the attendant details.

In the hands of William O'Connell, Alfred Gray and George B. Bascom the Dixon Company has every reason to believe that its interests and properties are safely guarded and cared for.

We are proud of "The Three Guardsmen" and, in order that they may see themselves as others see them, and that all may know them as they are, we print their pictures and add the readings of that most accomplished phrenologist, Miss J. A. Fowler, of the Fowler & Wells Company, New York. The phrenological readings of character were made from picture only with no knowledge of the men or the positions they hold, but we, who know the men, can vouch for the correctness of the readings.



WILLIAM O'CONNELL.

The breadth of this gentleman's head in his temples marks him out among his fellowmen as one possessing more than ordinary originality of mind and capacity to do a variety of work, and the breadth of head at the base, above the ears, is a sure indication of remarkable energy, force and executive power.

He is a quiet, unassuming, practical business man. He uses no flowery language; he is not what one might call an eloquent speaker, but he knows his business and is very direct in his style of speech, his manner of delivery and his way of doing work.

This man should make an excellent financier, and should know how to economize the funds of a company; he will not lay out recklessly, or for useless show, any sum that could be used for a better purpose. He hates shoddy of any

kind and will always use the best material when building up a business; hence his work will never fall to pieces, and he will be one to be consulted on many important subjects that would escape the attention of the casual observer.

He is a man who will prefer to deal in large projects; in fact, the larger and more comprehensive the work, the better he will like it, but one never hears him brag about what he is going to do. He lets his work speak for itself. He likes the unvarnished truth, however bitter and unpleasant it may be to hear, but he never thanks anyone for smoothing things over in such a way that they are untrue when presented. He is a man of sterling qualities. The world would be better if he were duplicated by the thousand.

He has a singular combination of modesty and independence of mind which show themselves at different periods of his life and work, and will be known for his originality of mind, his general economy of material and funds, his executiveness in starting others to work, and for his love of plain speech, for he always calls a spade a spade.



ALFRED W. GRAY.

Mental absorption and interest in his work characterize this gentleman. He is not a time-server, and whatever he is doing absorbs his mind so fully that he cares but little for what is going on outside of it. Were he bringing out a patent, he would sit up all night, in fact many nights, to complete his ideas. He does not thank anyone to disturb him—even to tell him that the hour of closing has come or that dinner is ready. He is no eye-server; hence will finish what he is doing in spite of opposition and hindrances.

He is quite artistic, could draw out patterns, make suggestions, invent machinery and contrive a hundred and one ways of doing the same thing.

He can see where the screw is loose, where the link is missing and can solve a problem much more easily in writing than in speaking, unless he writes his speech and reads it.

He is clever in analyzing, discriminating and differentiating between material as well as between ideas. He will know how to select the best and discard the worst, and his judgment can be relied upon; but he will not do so well as



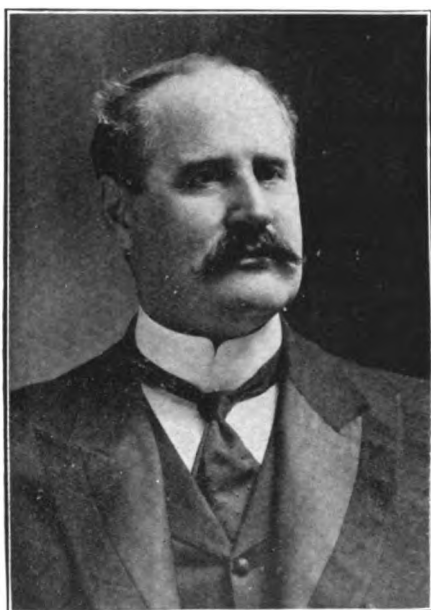
a ready salesman in business or a pleader before a jury. Every word he utters has a meaning, but he does not talk enough in the general sense of the term to be properly understood.

He remembers forms and outlines well and is able to carry in his mind's eye what he has seen in an exhibition; hence he can reproduce a thing from memory after he reaches his office, if he has not been able to take notes at the time when he examined a thing.

He is a little too retiring, but men will seek him out when they want his ideas, and he will always have more work on hand than he will be able to easily get through or accomplish.

His imagination gives him a good deal of inspiration and resourcefulness of mind, and he will bend a steel wire into many shapes before he is satisfied that he has got the right shape.

He is a man who can be depended upon, and the more he is known the better he will be appreciated and liked.



GEORGE B. BASCOM.

The photograph of this gentleman indicates that he has a well-poised character.

The head is finely proportioned, the features are distinctly marked and there is solidity, reliability and enthusiasm stamped upon his face and brow in an unmistakable way. When he says a thing he means it.

He does not hunt for spots on the sun, nor specks on a person's work or character, but he is very quick to detect errors, and these he will never allow to pass unaltered, for he aims at perfection in everything he does and knows how to secure it from those who work for him.

He should make an excellent organizer—a man to influence young men who are just passing out into the arena of life. He inherits a magnetic personality, and either as a business man or as a public speaker he will always win the respect and confidence of others.

He is a man who possesses original ideas; hence he is resourceful and capable of making the most of any material that he may handle.

He has excellent moral qualities, and these will make him a man sought by any church that he attaches himself to as a trustee, superintendent or reformer; hence in a business he will carry his moral insignia with him. He is kind-hearted almost to a fault, yet he has great strength of will and purpose which dignify his work and make him very persevering in his efforts.

He is a man who can create business and should be where he can meet with men and create a favorable impression and talk up a business or present things in an acceptable way. He will be known for his polished manners, his availability of mind, his resourcefulness of character, his desire to perfect a thing as far as possible, his intuitional understanding of men and how they can be handled.

### DIXON'S WATERPROOF GRAPHITE GREASE.

*Its Value on Shipboard for Lubricating Winches, Capstans, Rudder Chains, etc.*

Upon such exposed surfaces as deck winches, capstans and general machinery of that character on board ship, no lubricant serves so admirable a purpose as Dixon's Waterproof Graphite Grease.

This grease is one of heavy body and is almost wholly mineral in composition. It carries a large percentage of the world-famous Ticonderoga Flake Graphite, and on account of the presence of graphite and the heavy body of the grease it is not readily squeezed out, even by very great pressures. It possesses a very high lubricating value where its heavy body is not objectionable, such as on slow moving machinery or under heavy pressure. In addition to these characteristics it has a remarkable tenacity and adhesiveness and resists the action of fresh or salt water. It contains no soluble ingredients, and if applied either as a rust-preventive or as a lubricant to exposed machinery it gives excellent results. It cannot become rancid, gum, nor cause corrosion under any circumstances, and as a rust preventive it is unsurpassed.

As a lubricant for gears it will be found most satisfactory, inasmuch as it almost wholly reduces wear. Its strong waterproof characteristics is an addition to its other valuable features, and must not be construed as in any way detracting from its wide usefulness as a general heavy lubricant.

There are few applications for this grease where its peculiar properties are more appreciated than on shipboard, and many marine engineers have spoken most highly of it.

One engineer of our acquaintance was especially pleased with this grease for pump plungers and the guides of several of his auxiliary engines, where he had previously experienced much difficulty in procuring any lubricant that would stay in place.

This grease is thoroughly described in a little booklet which the Dixon Company have just issued, and copies of this will be sent free to all who are interested.

Dixon's Graphite Pipe Joint Compound well meets the severe conditions of a dyehouse or chemical works. It has a body of Dixon's Pure Flake Graphite, which is unaffected by water or acids, and owing to its non-"setting" and lubricating qualities, it makes possible any easy-breaking of joints without injury to pipe fittings or tools.

## USES OF FLAKE GRAPHITE ON SHIPBOARD.

### II. The Lubrication of Stern Bearings.

By H. H. RAABE, M. E.



All marine engineers are familiar with the ordinary type of stern-bearing and a detailed description of the bearing is unnecessary. The lubrication of such bearings has, in most cases, been left to the water circulating through them, although water is a very poor lubricant. In fact the result is not very much better than if the bear-

ings were running dry, except that the water prevents overheating.

In order to apply graphite to the stern-bearing the clearance in the stern-tube should be reduced as much as possible. In wooden vessels the stern-tube is generally formed by part of the "deadwood" of the stern and is lined with lead, giving usually about one inch of clearance around the shaft. The bearing itself usually consists of a brass bushing into which strips of lignum-vitæ are dovetailed with free spaces between them as in Fig. 7. The writer's method has

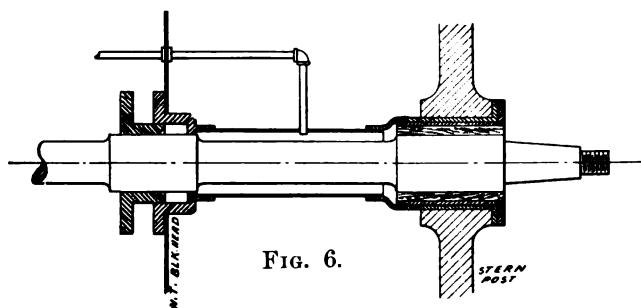


FIG. 6.



FIG. 7.

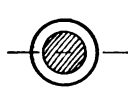


FIG. 9.



FIG. 8.

been to fill the space between the lignum-vitæ strips for about  $1\frac{1}{2}$  inches from the aftermost end of the bearing with pieces of soft wood, except one or two of the lowest spaces, as shown in the section Fig. 8.

The filling strips should be about one-sixteenth to one-eighth of an inch lower than the lignum-vitæ strips, so that they will not touch the brass sleeve of the tail-shaft. The main length of these spaces being left open, was then filled with the graphite compound referred to in the previous article, namely, one part of tallow softened by heat, with which an equal part of machine oil is thoroughly mixed, and then a third equal part, by bulk, of coarse flake graphite added until the entire inner surface of the bearing was flush. This is an easy matter if the ship is in dry-dock and the tail-shaft has been removed. But if the tail-shaft has not been taken out of the tube the compound can be stuffed into the open spaces around the shaft and the filling strips driven in afterward. Of course the propeller has to be removed for this operation. In any case it is best to saturate the strips of soft wood with machine oil before driving them in.

If it is possible, the clearance space around the shaft should be reduced by lining the stern-tube with wood and lead. If this should be impractical, spent grease taken from any part of the engines or auxiliaries, or even from the bilges, may be mixed with graphite and the space filled up as much as possible. The grease used for this purpose does not need to be of good quality. For, at any rate, it is always better than the grit that will enter the stern-bearing when the vessel is in shallow water.

The stern-tube should be tapped in some convenient place and the lubricant may then be led to it by means of a pipe and a large compression cup. A spring compression cup will not answer this purpose, as it would require a very strong spring to force the grease through the pipe and stern-tube and out through the stern-bearing, and as it is not necessary to have a continuous feed, a screw compression cup will answer the purpose. A turn of the screw-piston every half hour is sufficient to keep the bearing well lubricated. The lubricant being the waste from the thrust bearing, etc., costs practically nothing.

Fig. 6 illustrates a typical stern-bearing and shows the connections for supplying the graphited grease.

The outboard bracket-bearings of twin-screw steamships may also be lubricated in a similar manner, and in those cases especially the writer has obtained remarkably good results.

The bracket-bearings of a twin-screw hydraulic dredge, that was under the writer's care, used to wear so rapidly that the lignum-vitæ liners, and several times even the entire brass bushings, had to be renewed every six months. The cause of this rapid wear was the amount of sand that the vessel necessarily stirred up during its day's work. This had a free passage through the bearings and caused them to wear so rapidly that on two occasions the brass sleeve of the shaft was found to be wearing on the cast iron hub of the bracket, having worn completely through the bushing. This, of course, threw the shaft seven-eighths of an inch out of line on a length of about fifteen feet, which certainly did no particular good to the shaft and its bearings.

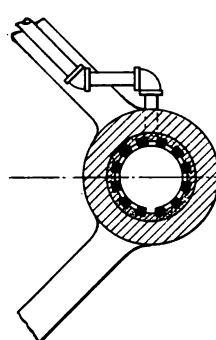


FIG. 10.

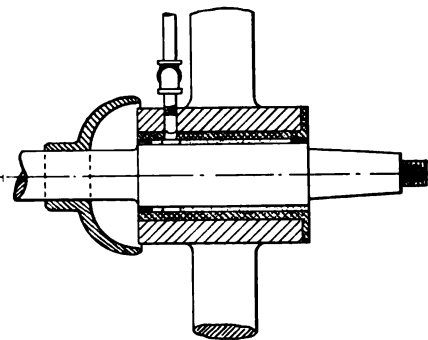


FIG. 11.

In the application of graphite lubrication to this particular stern-bearing, remarkably good results were obtained and the improvement was very apparent. The bearings were of the outboard type, the forward end being partially protected by a gauntlet fastened to the outboard shaft, as shown in Fig. 11.

After fitting a new bushing with *lignum-vitæ* wearing strips, the latter were partially cut away near the forward end of the bearing, and filling strips of the same soft wood, as described above, driven into each end of the bearing. The filling pieces at the forward end of the bearing were designed to fit closely to the brass sleeve, while the after ones were given one-eighth of an inch clearance. In the lowest space, no filling-piece was used at the after end of the bearing, as also shown in Fig. 10 and Fig. 11.

The top of the bracket-hub was then drilled and tapped for a  $1\frac{1}{4}$  inch pipe, which was led along the bracket and thence through the plating. Inboard a screw compression grease cup was attached to the pipe. Both the starboard and port bearings were thus equipped.

A  $1\frac{1}{4}$  inch hole was also drilled into the brass bushing to match with the tapped hole in the bracket-hub. The bushing was then put into place and the bearing was in proper shape to be lubricated. The mixture of graphite and grease, already described, was used in this case also.

This arrangement proved so satisfactory that the bearing strips had to be renewed only after three years and a half of hard service. But even then the old bushing was used again. The bearing strips had worn only three-sixteenths of an inch, while formerly the wear amounted to one-half of an inch *lignum-vitæ* and three-eighths of an inch of brass in about six months under precisely the same conditions.

The advantages of such lubrication will be easily seen from this example, and these suggestions are well worth the attention of marine engineers.

Care should be taken that the graphite compound is not mixed too stiff for stern-bearing lubrication, as the cold water circulating around the feed-pipes and bearings will keep it at such a low temperature as to prevent the easy flow of a stiff grease. The grease taken from the thrust-bearings, etc., should be mixed with an extra amount of common engine oil, the thinness of the mixture depending entirely upon the temperature of the water.

### DIXON'S GRAPHITE CUP GREASES.

A New Pamphlet Which May Throw Some Light on the Much Discussed but Unsettled Question of Oil vs. Grease Lubrication.



In a new booklet, just issued, we have presented certain facts of practical experience and observation, with the hope of throwing some light upon the much discussed and still unsettled question of "Oil vs. Grease Lubrication." We will not introduce the controversy here, assuming that there are cases in which a good cup

grease gives better service than oil; but we desire to point out briefly the advantages of Dixon's Graphite Cup Greases over plain cup greases and to indicate the exact purpose and benefit of adding flake graphite to greases.

The average shop or factory presents many conditions that are not taken into account in the oil-testing laboratory—imperfection of workmanship, carelessness or indifference of employees, dust and dirt with varying temperatures and loads. The rule governing the choice of lubricants must

be made to read: Use the thinnest oil or grease that will keep the bearings cool under the conditions of actual service and reduce wear and tear of machinery to its lowest point.

Though any waste of power from excessive friction is to be condemned, it is even more important that nothing should happen which could cause a shut-down or necessitate laying up for expensive repairs. The saving of coal by a change of lubricants is not to be compared to the importance of preventing shut-downs and lessening the wear and tear and repairs to machinery. Grease can be made with low viscosity—lower in fact than many much-used oils and, therefore, no objection can be raised to the use of grease, provided a suitable grease be selected for the work in hand.

Exhaustive experiments and years of practical experience have proved that the addition of pure flake graphite to oils or greases enormously increases both their efficiency and endurance, enabling a given oil or grease to do heavier duty than would otherwise be possible or, to express the same thought another way, if pure flake graphite be used, a thinner, less viscous oil or grease may be employed with entire safety and satisfactory results. Graphite imparts to friction surfaces a wonderful smoothness that relieves oil or grease of a very considerable portion of its task of keeping the microscopically rough surfaces apart.

For purposes of lubrication, graphite in the thin, flaky form is recommended because of its greater purity and because the thin flakes adhere much more closely to metal surfaces.

The pure flake graphite from the Dixon Company's famous mines at Ticonderoga, N. Y., is especially desirable because of the thinness, purity and uniformity of the flake. This graphite, mixed with suitable lubricants in the proper proportions, forms the many graphite greases of the Dixon Company, and is their vital part.

The action of Dixon's Flake Graphite is that of filling up low spots, scratches and the rough grain of the metallic surfaces, forming thereby a perfectly even, tough glaze of exceeding smoothness on the rubbing surfaces and reducing the necessity for more than a relatively small quantity of oil or grease. It enables lighter, thinner lubricants to give remarkably good results. Cutting of a bearing surface thus coated is impossible and there is a great reduction in the natural tendency of bearings to either warm up or over-heat. Graphite prevents direct metallic contact and very largely reduces wear of parts coated with it. The thin veneer or layer of flake graphite takes up whatever tendency to wear there may be and is thus expended and must be renewed.

If a certain oil or grease is found to lack sufficient body for a given duty, pure flake graphite may be added to it in small percentages, say 2% to 8% by weight, depending upon the circumstances, and this will so greatly improve the condition of the rubbing surfaces that the oil or grease will be found to have ample body for the work.

As long as graphite allows the use of thinner, less viscous and probably cheaper oils and greases, the engineer needs no urging to use them, if he can do so with entire satisfaction.

To suit various needs, the Dixon Company manufactures a variety of greases. Although great benefit is to be de-

rived from adding Dixon's Pure Flake Graphite to ordinary greases, close attention must be paid to the proportions in order to secure the best results.

Dixon's Graphite Cup Greases possess the peculiar merit of having the lubricating qualities of the best mineral oils and, at the same time, being in semi-solid form, are simple, cleanly and economical in application. These greases, being composed almost entirely of mineral oils, are fluid the moment they reach the journal, the lubricating effect being that of regular oils with none of their disadvantages.

They are remarkably soft, as compared with ordinary cup greases, and yet sufficiently solid to prevent their being wasted. The viscosity of these greases is very much lower than that of any other greases of anything like equal efficiency.

Dixon's Graphite Cup Greases are made in six degrees of hardness—Nos. 0, 1, 2, 3, 4 and 5 respectively, No. 0 being the softest—about the consistency of soft vaseline. No. 5 is the hardest and has a consistency about that of tallow, but with somewhat more cohesiveness. The softer grades are extremely valuable in the lubrication of light, high-speed spindles and may be fed by means of compression cups or in open bearings. The harder grades are suitable for work more severe, so far as pressure is concerned. They have sufficient body to stay in place, even at very slow speeds and high pressures.

All of these greases may be fed through compression cups, the higher grades, of course, requiring greater compression and larger opening. In general they may be used in exactly the same manner as any other greases of corresponding consistencies. As no animal fats enter into their composition, no fear of corrosion, even of composition metals, need be felt.

These cup greases have one characteristic which is peculiar to them. They retain their ordinary consistency through a large range of temperatures. For instance, there is very slight variation of, say, the No. 3 grease between 40 and 140 degrees; so they have a larger range of usefulness when temperature conditions only are considered than any of our other greases. This characteristic is common to Dixon's Graphite Cup Greases, which may be used on almost every kind of machinery, stationary engines, locomotives and marine engines; on refrigerating, wood-working and textile machinery; in machine shops, paper mills, flouring mills, and stamp mills; in short, in almost every industry where power is employed.

They may also be used in all kinds of cups or open bearings on shafting; pins, slides and bearings of almost every character. The higher numbers, 3, 4 and 5 respectively, are indicated in places subjected to a comparatively high degree of heat from outside conditions; for example, the heat of engine and boiler rooms or steam pipes in proximity to the cylinders of internal combustion engines.

They are recommended as most excellent marine lubricants, assuring cool and smooth operation of thrust, tunnel-shaft and main bearings, as well as auxiliaries.

For the lubrication of various bearings of automobiles and motor boats, these greases will be found in the highest degree satisfactory.

## GRAPHITE FOR THREADED CONNECTIONS.

Some Observations Upon the Superiority of Dixon's Graphite Pipe-Joint Compound Over Cemented or Metal-to-Metal Work.



The up-to-date man laughs at the ancient tradition of using red lead or white lead for general pipe-fitting. Red lead sets or hardens very rapidly, cementing the joints so firmly that the fitting is practically welded to the pipe and separation is nearly impossible.

We hear a good deal of talk these days about fitting pipes metal to metal, only using a little lubricating oil on the threads to facilitate screwing-up. It may be possible to cut threads on pipe and fittings so accurately and uniformly that the parts will fit closely together, metal to metal, and make a tight joint with nothing needed to fill up the chinks. This, however, is more a theory than a condition. Dies and taps wear loose in machines and orders are rushed out of shops and factories without the care necessary for perfectly accurate threads on pipe and fittings. There is a corresponding difficulty in fitting metal to metal joints so that there will be no leaks.

Where oil is used alone, the joint can be screwed up without any trouble and, for a time, is perfectly tight but not permanently so, as the oil is burned out and otherwise destroyed. When the oil has worked out, rust rapidly works in between the threads and forms a rust joint that is about as difficult to open as when made up with red lead.

If joints are screwed up with graphite on the threads, the graphite will be thoroughly distributed over the surfaces, filling in all the smallest chinks and pores in the metal, forming a good, smooth, impervious coating of lubricant and rust-preventive that enables the joint to be opened many years after.

Only a very small amount of graphite is necessary to absolutely prevent rust forming in the joint, and the high lubricating quality of graphite enables the fitter to make a tighter joint than with any other substance. The layer of graphite on perfectly cut threads is so extremely thin that all the advantages of a metal to metal joint are obtained with none of the disadvantages of rust and sticking.

The very best form of graphite obtainable for pipe-fitting uses and, in fact, for all other threaded connections, such as bolts, nuts, etc., is Dixon's Graphite Pipe-Joint Compound. Manufactured for over a quarter of a century, it has stood the test of time and is the only compound of its sort officially recognized throughout the country.

The Dixon Company has just issued a new booklet on the subject of their Graphite Pipe-Joint Compound and will be glad to send copies, together with samples of the compound, to all interested.

Dixon's graphite publications are sent free of charge to all who are interested in the subject of graphite.

## SOMETHING ABOUT BELTS AND PULLEYS.

By W. H. WAKEMAN.

When an author is about to begin an article relating to steam engineering or mechanics, he must choose between two courses, both of which have good and bad points. If he frequently states that matters referred to relate to the plant in his charge, some readers are sure to think that he is trying to advertise the fact that he has charge of a plant, which is not an extraordinary state of affairs, as viewed from the reader's standpoint. However, if some of them should secure positions as engineers in various plants, and after one year of this work they should fully express their opinions, it would be voted the hardest days of their lives, provided all duties of their positions are faithfully discharged on time.

Nevertheless, facts gleaned from an engineer's personal experience are always interesting and instructive.

If he mentions facts in his article without stating how the information was secured, some readers are sure to conclude that the matter he presents is borrowed from others without intention of repaying the same, or else it is only given as a theoretical treatise whose value is unknown. I suppose that a portion of his interested followers give him credit for basing remarks on actual experience, which is frequently proper, as it seems unnecessary to always state definitely the source of information, so long as it is known to be correct.

This article is based wholly on personal experience, so there is no chance for mistake about it. In 1878 I was placed in charge of a portion of the machinery in a mill, including the engine and boiler, and soon afterwards I discovered that my predecessors had used a novel but effective article for preventing belts from slipping. It was nothing more nor less than common coal tar.

In those days we did not know how many beautiful things could be extracted from the unpromising substance, therefore I was scandalized and horrified at the idea of putting it on a belt. It is only fair to say, that while that uncomfortable feeling in regard to its use for that purpose gradually disappeared and gave no trouble for a time, it has returned in full force and will probably not depart.

I have never seen anything like it for fastening belts to pulleys, for, when first applied to a belt, it had no more chance to slip than a train of gears; but the after-effect on both pulley and belt was something fearful to behold.

For several minutes after an application, consisting of pouring it on, the air was full of distressing sounds resembling the tearing assunder of hundreds of sheets of stout paper, for when the belt parted from the pulley, the protests were loud and penetrating.

The air was full of floating dust whenever the mill was in operation and, as this mingled with the tar, lumps of various shapes and sizes formed on the face of our pulleys until we hardly knew what diameter to call them.

It made belts hard and brittle, but when one was worn out, we bought another and kept on applying the coal tar, because it cost but little and could always readily be obtained. It absorbed much power in tearing pulley and belt apart (that expression is correct), but this feature was not a disturbing element at that time.

After continuing the use of this unprofitable and disagreeable article for years, somebody suggested that we send for a sample of Dixon's Traction Belt Dressing. Acting on this, it was secured and given a trial. Nothing exceeds coal tar in holding power, when first applied, unless it is glue; but the advantage of this excessive holding power is balanced by the power required to part the belt from pulley when it comes to the point where its work is done.

We found that Dixon's Traction Belt Dressing would cause a belt to hold its place while carrying any load that ought to be put upon it and, at the same time, it parted from the pulley comparatively easy, at the proper time, therefore it was pronounced a superior article.

In addition to these good qualities, it kept our leather belts as pliable as could be expected, after the abuse they had received, thus preventing them from failure by cracking before they were worn out by legitimate use. The coal-tar keg was consigned to the scrap-heap.

This reminds me of an incident that happened in a box factory. One of the saw arbors began to heat for lack of lubrication, causing excessive friction, which in turn made the belt slip. The sawyer put powdered rosin on the belt to prevent slipping, and continued the use of the saw until the appearance of Babbitt metal on the floor gave more emphatic notice that it was time to stop unless it was desired to burn up the shop.

For a long time afterwards the expression, "Put some rosin on the belt," answered for a by-word in that shop, whenever a bearing began to heat from any cause.

While I have never known of coal tar being used in more than three mills, rosin is much more in evidence; but both of them are relics of barbarism in engineering and mill work, and therefore have no place in our manufacturing world of the present time. They should be permanently discarded, and the belt dressing above mentioned used instead.

After the arduous labor required to keep our plants in operation, week after week, often in an atmosphere that would not be tolerated by workmen in other lines on account of heat, coal gas, etc., great relief is felt when the season for a short vacation arrives and we camp out for a time in the midst of trees waving in gentle breezes, brooks that babble over their stony beds; birds that pour forth their musical notes; squirrels that leap from tree to tree; wild flowers that bloom and please both sight and smell, while the novelty of "roughing it" adds new zest to life and invigorates the whole system, preparing us for better work in the future, thus proving beneficial from every point of view.

It has occurred to me in the past that some of these experiences were somewhat rougher than is actually required, as, for illustration, when a heavy rain came down during the night, some of the water penetrating our tent, first causing unpleasant dreams, followed by an awakening that was at first ludicrous, then unpleasant and finally exasperating.

The result is that we now occupy a small cottage during these brief intervals of rest, a front view of which is shown in Fig. 1. Doesn't look very elaborate, does it? Well, it answers every purpose, and nothing more is required.

Happy days are spent here every year, especially as other cottages are close by, filled with friends that look forward



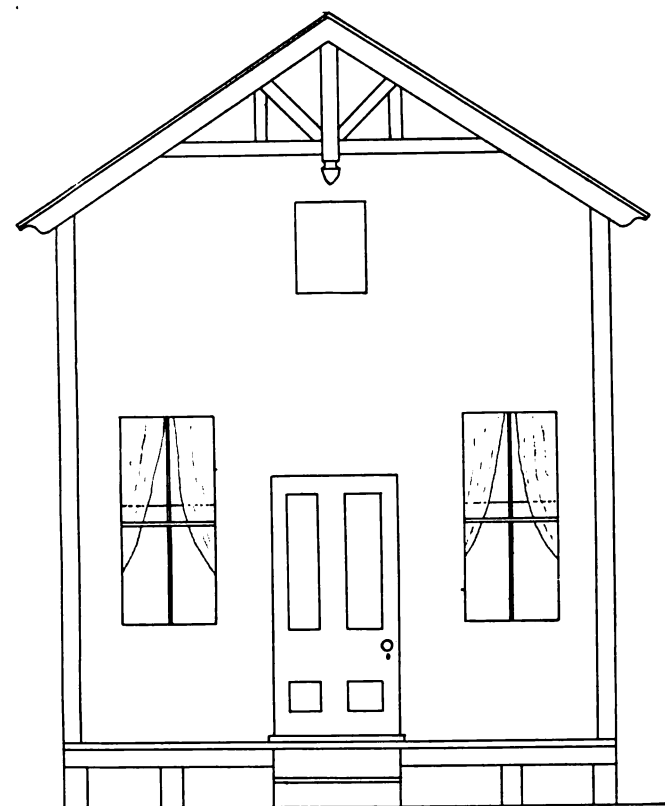


FIG. 1.

to the annual encampment with pleasure and enjoy its privileges. When rain comes down in torrents, while it is yet dark, we think of the tent we used to have, are satisfied to leave it with past memories and come forth in the morning dry and comfortable.

A portion of this roof consists of roofing paper nailed to smooth boards and covered with a generous coat of Dixon's Silica Graphite Paint. This makes a light and inexpensive roof that is perfectly tight under severe test and it proves durable. I cannot state how long it will last, but it has proved satisfactory in my case for four years and is apparently good for many more. It has not been repainted.

This roof is actually used for only about two weeks in the year, yet it is always exposed to the weather the same as other roofs. It is in a grove and, therefore, it is nearly always shaded by trees. People who have given these matters due attention will readily admit that this condition is very unfavorable; hence if it gives satisfaction here, it will elsewhere.

I have recently painted a tin roof with this kind of paint and, although it has not been in use long enough to boast of, yet it has the appearance of giving very satisfactory results.

As the title of this article refers to belts that travel fast and pulleys that revolve swiftly, readers may think that reference to quiet scenes, while camping out, have no connection with this machinery; but from my point of view the two subjects are closely connected, for, by successfully using belts, pulleys, etc., we earn money that enables us to enjoy the more quiet scenes. Therefore, not only a strong but a vital connection exists between the two subjects.

Dixon's graphite publications are sent free of charge to all who are interested in the subject of graphite.

## Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, type-writer work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing.**

**Dixon's Plumbago for Powder Glazing.**

**Dixon's Plumbago Foundry Facings.**

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite.**

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Automobile and Bicycle Lubricants.**

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Motor Chain Compound**, for perfectly lubricating transmission chains.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

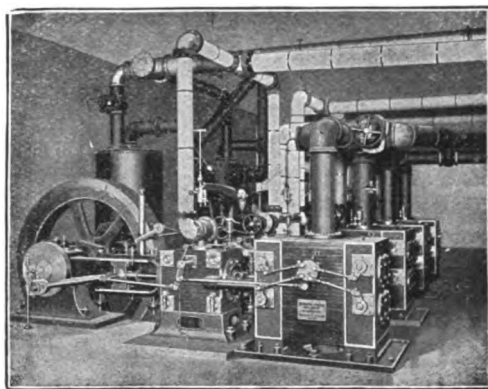
**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians.**

Special circulars with detailed information sent on request.

## FLAKE GRAPHITE FOR THE LUBRICATION OF AIR COMPRESSORS.



Certain important conditions are presented in the lubrication of air compressor cylinders, not encountered in the case of steam cylinders.

Dust and grit drawn into the cylinders through the intake frequently set up destructive grinding. The heat is dry and tends to carbonize cylinder oils, especially compounded oils, clogging the outlet valves and choking the discharge pipes. If an oil of too low flash-point be used, explosive vapors are formed which high frictional heat at some point may accidentally ignite. A number of frightful explosions of air receivers have been traced to this cause.

Dixon's Pure Flake Graphite imparts to cylinders a wonderful smoothness and polish, filling in and overlaying all irregularities, scratches and the rough grain of the metal, provides a firm, new surface, enduring any temperature, reducing frictional resistance and wholly ending all groaning, grinding or cutting. If desired, the supply of oil may also be greatly reduced.

The Dixon Company has just published the eighth edition, revised and enlarged, of "Graphite as a Lubricant," discussing in detail the theory of graphite lubrication and its practical benefits. Copies will be sent upon request.

### ARTIFICIAL CAMPHOR.

The "*Scientific American*" tells us that the distant and uncertain supply of camphor, the gradual destruction of its trees, the length of time required to grow new ones and, lastly, the camphor monopoly, have stimulated chemists to devise a process of manufacturing camphor synthetically.

And now, within twenty-five miles of New York City, at Portchester, a plant has been erected; the science of chemistry is doing its work, and a natural product of world wide utility, but of heretofore limited and distant supply, is being manufactured on a commercial scale.

The substance obtained by the process is camphor—true camphor artificially produced.

A TURN or so of every threaded joint, or pipe or bolt with a closer, better fit, is easily obtained by the use of Dixon's Graphite Pipe-Joint Compound.

The ease of fitting and separating joints, the tightness of all connections and the great number of its uses, give this compound a valuable place in the kit of every user of the monkey-wrench or pipe tongs.

## THE MARGIN.

A local Jersey City school this year swept away the time-honored system of having the scholars occupy the platform at Commencement. In this way, the Valedictorian, the Salutatorian and the Class Poet were taken for granted and, in their stead, a professional speaker of high rank addressed the crowded audience.

The speaker was Prof. Edward Howard Griggs, well known at Chautauqua, New York City and Brooklyn. His address was clever, clearer than crystal and adapted to the audience and, for an hour, on a hot evening, he held the house spellbound. His topic was: "What Shall We Do With the Margin?"

He explained the function of a margin to business success. A business that only pays expenses is doomed to fail. Without a margin a business is already in the very act of failure. What the business man does with his margin points out the future of the business. So this complex affair we call life is governed by what is done with the margin.

A percentage of life, as of business, must go for running expenses; for instance, the time spent in earning a living. A percentage must go for repairs; for example, sleep and food. Then, for all, there should be some margin; to some, less; to some, more; but to all, some; some margin; something to spare; some life left over to direct as one wills and not as some one else wills; hence the speaker's topic: "What Shall We Do? or, What Do We Do With This Margin?"

In the margin the person's individuality comes in. How do you use your margin? What do you make it bring you?

The topic was thoughtful, clever, cute. When the audience rose, after the speaker concluded, the comment was in every mouth: "What a sensible, clever, cute, useful address!"—J. A. WALKER.

### AUTOMOBILE AND CARRIAGE SPRINGS.

**How to Prevent Rusting, Squeaking and Liability to Breakage.**

We have lately seen and examined some broken automobile springs. The rusted condition of the metal showed just where the fault laid. The leaves of the springs, where they came in contact one with the other, had not been properly painted.

If the leaves of automobile or carriage springs are painted with Dixon's Silica-Graphite Paint or with a mixture of linseed oil and flake graphite, the springs will never squeal; they will ride much smoother and, probably, will never break.

The flake graphite thoroughly coats and lubricates the metal, enabling the leaves to slide one over the other with ease as they are intended. This assures smoother riding qualities, freedom from squeak, protection from rust and wear, and reduces liability to breakage to the minimum point.

Carriage builders, like the Studebaker Bros. Mfg. Co., have for many years fully appreciated the value of Dixon's Flake Graphite for the protection of carriage springs.

DIXON'S graphite publications are sent free of charge to all who are interested in the subject of graphite.

### SHOPPING THE LOCOMOTIVE.

At a recent meeting of the Pacific Coast Railroad Club, Mr. F. P. Roesch presented an interesting paper on railroad management, in the latter part of which he discussed the question of locomotive maintenance; in part he said:

"This is a large item of expense; locomotives to be economical should be maintained as nearly as possible in condition to handle their full tonnage rating. The loss in freight handled, to say nothing of delays, etc., would be far in excess (if locomotives are not in first-class condition) of what the cost of putting the engine in good condition would have been. The locomotive that is not capable of taking a train over the road without 'falling down, setting out or dying,' should be left in the roundhouse until put in good condition, as it is simply a dead loss to try to keep it in commission.

"The average cost of overhauling is about \$1,500. The earning capacity of a locomotive is about \$200 to \$600 per day."

The locomotive engineers of the country some years ago began to use Dixon's Pure Flake Graphite as an emergency preparation when bearings ran hot and cylinders and valves labored and groaned. They have gradually come to believe Dixon's Graphite as a never-failing cure for friction troubles. By its use they are enabled to make record runs, pull the heaviest trains and to avoid delays and breakdowns, cut brasses and pins, scored cylinders and worn valves and all the other results of imperfect lubrication that take their locomotives off the road and put them into the shop.

Master mechanics and superintendents have long since learned that an ounce of prevention is worth many pounds of cure, and that a little flake graphite used on pins and eccentric straps in cylinders, valves and air pumps, will save hundreds of dollars worth of repairs and keep the locomotives in the best condition on the road, where they are needed and where they are valuable.

### SEPARATING GRAPHITE FROM EXHAUST STEAM.

One of the questions which very frequently come up with those who are beginning to use graphite as a lubricant, is how to separate it from exhaust steam. The answer to this is absolutely simple. Any separator or grease extractor or filter that will remove cylinder oil from exhaust steam will remove every trace of graphite.

Suppose, however, on shipboard that the graphite gets into the condenser and coats the tubes a little. We have been informed by a marine engineer of great experience that the action of graphite in a surface condenser is to greatly reduce the electrolytic corrosion of the tubes. He told us of one instance where this was brought very strongly to his notice on a ship where graphite has been used as a regular cylinder lubricant. The exhaust steam discharged into the top of the condenser so that the tubes were slightly coated with it on their upper sides. Some months later, when it became necessary to open and examine the condenser, it was found that the under sides of the brass tubes where almost no graphite had been deposited, were very badly corroded, while the upper sides seemed to be in perfectly good condition.

There is still another point in this connection, and that is, if graphite gets into a boiler it will be found that it will make the boiler scale much more friable and less tenacious.

Only a little graphite is necessary in steam cylinders to give excellent results, and there need be no fear of there being any secondary evil results if ordinary good practice is followed in the management of the steam plant.

### DIXON'S GRAPHITE GREASE No. 8815.

This grease possesses a remarkable degree of resistance to heat although its consistency is such that even at ordinary temperatures it will feed readily through a compression grease cup. It is particularly valuable for lubricating bearings, spindles, cams, etc., of gas engines, where the heat radiating from the cylinders liquifies ordinary greases so rapidly that they melt and run off without doing useful work.

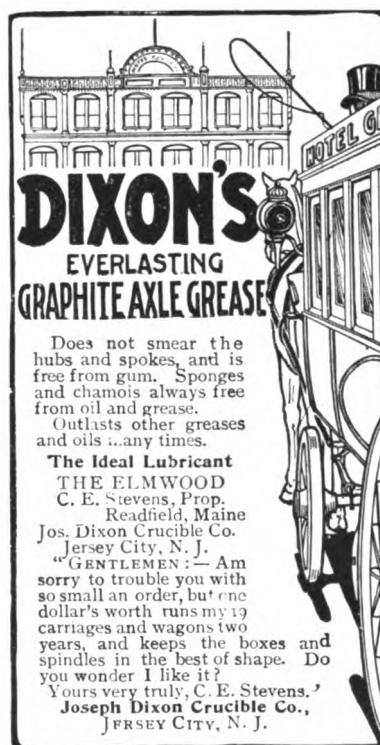
### "GRAPHITE AFLOAT AND AFIELD."

A New Dixon Booklet.

A new booklet has just been issued by the Advertising Department of the Dixon Company, called "Graphite Afloat and Afield," which aims to put before those interested in yachting particularly, in an attractive form, the several productions which will prove of especial value upon the different classes of yachts and boats.

The problems encountered in the steam yacht or even in the motor boat, are the same which confront the operator or engineer of the enormous engines of our liners, although in a much lesser degree. Nevertheless, Dixon's Pure Flake Graphite, Dixon's Graphite Cup Greases and Waterproof Grease, Dixon's Silica-Graphite Paint and Graphite Pipe-Joint Compound are very useful upon the power launch, as they are upon the ocean greyhound.

A copy of this booklet will be freely sent to all who are interested in boating or shooting, for graphite serves a valuable purpose to the sportsman and yachtsman.



# OUR LONDON PAGE

All Communications, Inquiries, Etc., relating to this Page should be addressed to Joseph Dixon Crucible Co. (Geo. W. Wollaston, Mgr.), 26 Victoria St., S. W., London.

## Don't let Trouble

come before you call in the aid of graphite. Test it **now**. No grease is so good as a **graphite** grease. Oils alone are not satisfactory in many respects. Graphite does not eliminate oil entirely, but reduces its use to a minimum.

SAMPLES FREE.

JOSEPH DIXON  
CRUCIBLE CO.,

26, Victoria St.,  
LONDON, S.W.

### TALLY-HO!

The following letter is unique of its kind, and is certainly uncorrupted testimony to the merits of Dixon's Graphite and Pipe-Joint Compound. We do not think Mr. Fox, who writes as one would expect of a rollicking old huntsman, will object to our inserting his interesting letter verbatim:

BECKENHAM LAUNDRY, KENT, May 4, 1904.

As per advertisement,

*Mechanical World*, current issue.

Dear Sirs,

I shall be very much obliged if you would kindly let me have the little booklet & sample of your graphite for lubricating bearings.

Some 2 years ago I had a small quantity of your graphite given me. I had only then just left the huntsman's saddle, hung up the hunting horn, put the spurs on the back of the kitchen door and used the hunting whip to drive the cats off the garden, & after 30 years in the saddle (in fact, since a small kid) I bought a steam laundry and begun to learn something about machine bearings & their vagaries, such as getting hot, jamming tight, squeaking & in some cases disappearing altogether despite oil, asbestoline, mutton fat, soft soap and cold swabs. Then your graphite. I use it when I have it mixed with mutton fat, asbestoline and dry, & have learnt a thing or two both with gas engines & steam, high-speed fans, heavy bearings of callendars & my van & cart axles. I have mixed it & given it to neighbours for the spindles of hydros of 2,000 P. min. R. & they think it is real top sawyer stuff. Now I want to give it an extended trial & will let you know what machines I use it on. It ain't a lame horse, I know.

Is that your stuff I bought in Thames Street for steam pipe jointing? If so, I use it for coating Jenkins 96 washers, for flange unions, all bolts, nuts and pipe joints doing up the connections of injectors, painting over asbestos rings of mud & manholes of steam boilers, & have not yet had *one joint* blow & have turned steam in directly joint was made.

One old plumber & steam pipe fitter said: "Dammed if I like that new fashioned stuff, give me red lead!" One

week after he was coasting round & begging for a bit, as he had found it the best stuff ever he had used & still uses it—what ho!

Manager of the works of a big Manufacturing Company did not believe in it for his Plant—then try a bit—three weeks after he sent the following letter to my place: "Quick, let's know name of stuff—black-looking stuff—you gave me t'other day; where can I get it? local iron-mongers don't keep it." (They have to keep it now or lose this firm's custom!) And yet the bally old huntsman has to show mechanics, engineers, etc. the good things of their own trade. What think of it? I read, mark, learn and try when I see a maker says his things are good.

This black stuff I get in 7-lb. tin. Dixon's Jointing Putty, I think, is on the tin—red label like my old hunting coats. Don't you see, Mr. Graphite Dixon, I don't want people coming & calling me names and putting their fingers to their noses saying, You don't know the good things in their steam and water pipe line. When threads are clean, I don't use hemp or tow, but just paint a little on threads & joint up right away. It may be rude & spit at you for a moment, but quality tells & good behavior shows itself, as the joint is soon as silent as a mouse when a hungry cat is sniffing around, & like the Sea Serpent we know it's there but it don't show itself werry often, yet it keeps. steam, water and gas where you expect it to be & don't let it play at fountains through the joints.

Don't you believe all I have written about it? If you don't, you never ought to be able to sell or make another bit. And that Sir is from

CHARLES FOX,

The Champion Clear Starcher.

Just a little N. B.

Trouble with gear & hot bearings of collar & shirt ironing machines, with hot Bunser burners, heated gas spray jet running right through centre of roller running at 300 revolutions & grease, asbestoline & other makes splashing & spluttering all over beautiful clean white shirts and collars—operators crying, Missus doing something worse—engineer tearing his hair off, so as it shan't turn grey—when presto, half a mo!—little dry Graphite, no more fright, everything all right, things nice & white, bearings clean and bright, little blacky white, not so black as might, but—*right!* Fact! Good-night!

SLIP.—A Frenchman once told an American that there were 49 ways of cooking eggs, but 99 ways would hardly cook the Dixon Graphite Compound.

Emergency Recipe for Leakage in Composition Pipe.

By the Pipe Doctor, C. Fox.

Ingredients.—Strip of old calico or linen.

Dollop of Dixon's Pipe Putty.

How to apply.—Spread Dixon's Putty on rag; bind tight with twine round leak; then go about your other business. Don't worry.

# Graphite

VOL. VI.

SEPTEMBER, 1904.

No. 10.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

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## PAINT TEST AT COPENHAGEN, DENMARK.

Attest fra Statsproveanstalten i Kjøbenhavn viser Resultaterne af Forsøg foretagne med Dixons Silica Grafit, Blymonnie- og Skælpanser-Farve, der alle vare udsatte for Paavirkning af Røggas ved en Temperatur af ca. 200°.

Dixons Silica Grafitfarve viste sig at være absolut den bedste og de andre Farver langt overlegen, idet den først blev angrebet efter 60 Dogn (Monnie efter 7 Dogn) og først blev ødelagt efter 150 Dogn (Monnie efter 17 Dogn). Altsaa er Dixons Silica Grafitfarve den bedste Farve til Jernkonstruktioner, der ere udsatte for Rog og Gas-Arters Paavirkning.—GUSTAV HALBERSTADT, Kjøbenhavn K. Telegr.-Adresse: Regulator. Telefon No. 1004.

### TRANSLATION.

Certificate from the Government Test Station at Copenhagen shows the result of experiments made with Dixon's Silica-Graphite, white lead and armor-plate paints, all of which have been exposed to the influence of smoke gases at a temperature of about 200 degrees.

Dixon's Silica-Graphite Paint turned out to be absolutely the best and much superior to the other paint, being affected only after sixty days' exposure (lead after seven days) and totally destroyed after an exposure of one hundred and fifty days (lead after seventeen days).

Therefore Dixon's Silica-Graphite Paint is the best paint for iron constructions which are exposed to the influence of smoke and gases.

Mr. Gustav Halberstadt of Copenhagen, Denmark, is an enthusiastic, active agent for Dixon's Silica-Graphite Paint in Denmark. Mr. Halberstadt uses the mails very extensively to distribute blotters, books and cards of attractive designs in colors, telling in the Danish language of the rust preventive qualities of Dixon's Silica-Graphite Paint.

Springfield, Mass., Oct. 19, 1903.

The 'Eterno' pencil is the best copying pencil I have ever used. The copy is much better than ink.

F. B. Bickley.



**ST. REGIS HOTEL, NEW YORK CITY.**

**TROWBRIDGE & LIVINGSTON, Architects.**

**THOMPSON-STARRETT CO., Contractors.**

**MARC EIDLITZ & SON, Contractors.**

The new St. Regis Hotel, corner Fifth avenue and Fifty-fifth street, located in the very heart of the fashionable residence section, is a marvel of scientific construction and artistic decoration.

Erected at a cost of \$5,000,000, it establishes a new standard of luxury in hotel life. Trowbridge & Livingston, the architects, have furnished Col. John Jacob Astor, the owner, with the grandest palace the world has ever seen.

It would require many pages to describe the excellent architectural and mechanical features of this hotel. The June issues of *Architecture* and the *Architectural Record*, New York City, contain complete descriptions and remarkably fine illustrations. A \$2,000,000 addition to the St. Regis is now being built on the Fifty-fifth street side.

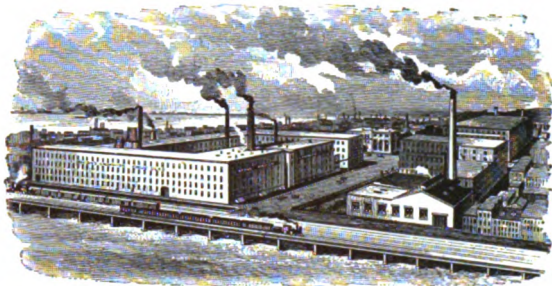
Dixon's Silica-Graphite Paint was used to preserve the structural steel work of the St. Regis Hotel, and the new addition.



ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO., JERSEY CITY, N. J., U. S. A.

### BRANCHES AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Horgen (Switzerland), Finland, Havana.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., September, 1904.

### AN ACTIVE DEPARTMENT.

The Paint Department appropriates the columns of GRAPHITE this month with seasonable talk on the preservation of metal surfaces with Dixon's Silica-Graphite Paint.

Thirty thousand copies of this issue will be distributed to paint specifiers and users in every country in the world. We will appreciate your filing this copy for future reference or the passing of it to a friend who may be interested in the use of a "high grade" protective paint.

We give careful attention to letters of inquiry as to the adaptability of Dixon's Silica-Graphite Paint for different classes of metal and wood construction.

### WORLD STATISTICS.

At a rough calculation the population of the world is more than one billion souls. These speak some 3,064 languages, and are worshippers of more than 1,100 religions. The average length of life is 33 1-3 years. One-fourth of mankind die before the seventh and one-half before the seventeenth year. Only one-sixth live beyond the age of sixty. Thirty-three millions die annually, 91,000 daily, 3,730 every hour, 60 per minute. While one-fourth are capable of bearing arms, only one in a thousand is naturally inclined to the profession.—*New York Herald.*

DIXON'S graphite publications are sent free of charge to all who are interested in the subject of graphite.

### QUALITIES OF THE FUTURE SALESMAN.

We quote the following from the sayings of the Minneapolis City Salesmen Association:

"The salesman of the coming ten years will differ from the salesman of the past in sobriety and great capacity for work, physical endurance and keeping everlastingly at it."

"The salesman will find future conditions more demanding than those in the past."

"The whole solution of the salesman problem in the future lies in the word 'work.'"

"Today there are too many men who are doing other things when they ought to be selling goods. Where we find one man who will work hard and will do everything in his power to make the best of his possibilities, we find nine who fail to come up to this standard."

"Many salesmen of today fail to remember that the expense of doing business runs so dangerously near profit and loss as to make many business ventures decidedly uncertain. Under present conditions it is causing the manufacturer and the wholesaler too much to sell the goods. On the one side, profits are cut down through the operation of combinations; on the other side, expenses are higher than ever. There will come an end to this sometime. Such conditions breed revolutionary changes. The problem before the wholesaler and the manufacturer is to sell the goods at the lowest possible expense. In getting the volume of business the old-type traveling salesman is not valuable."

"Give me a man who will keep everlastingly at it, in preference to the genius who makes some bright flashes and retires on his laurels for several days' rest."



**BOAT HOUSE.**

United States Naval Academy, Annapolis, Md.

The Government is spending millions of dollars on new buildings and improvements, at the United States Naval Academy, Annapolis, Md.

The design and construction of the magnificent buildings are under the direction of Mr. Ernest Flagg, an eminent architect of New York City.

Dixon's Silica-Graphite Paint was selected for preservation of steel work of the new Boat House, the new Marine Engineering Building and the new Cadets' Quarters.





APARTMENT DWELLING, NEW YORK CITY.

Horgan & Slattery, Architects.

The apartment dwelling on the southeast corner of 61st Street and Madison Avenue, New York City, is a model of architecture, construction, arrangement, decoration and equipment. It occupies a lot 110 ft. square, in one of the most exclusive and conservative residence districts of the city.

The design of the building is Modern French Renaissance, and the elevations are faced with Indiana limestone from the sidewalk to the roof. The construction is of the skeleton-steel type, thoroughly fireproof, with columns resting on steel caissons on solid rock, which is found 50 ft. below the surfaces. The main entrance is on Madison Avenue, and the porte-cochère extends under the building

into the first story. The building proper rises ten stories in height above the curb line, with a basement, and roof house for servants.

There are but two apartments on each floor, each comprising a drawing room, library, dining room, reception room, four bed chambers and three bathrooms; also two servant's bedrooms, a bathroom for servants, kitchen, serving pantry and butler's pantry. In addition to these, there are numerous closets, storerooms and wardrobes. The price of the apartments, unfurnished, are from \$6,500 to \$8,500 a year. The building was designed and erected for Mr. Frederick Haberman. The steel work was started October 7, 1900; the building was completed and occupied October 1, 1901; the cost was \$1,230,000.—

It is interesting to observe that in the selection of the very best class of building material for this magnificent apartment dwelling, Messrs. Horgan & Slattery, architects, provided for the use of Dixon's Silica-Graphite Paint for all structural steel work.

#### NEGLECTED ROOFS.

"Out of sight, out of mind," is strikingly true of that portion of the building which protects us from the storms, heat of the day and dampness of the night.

Roofs are usually large flat surfaces, which by reason of their full exposure to the elements, bear the very hardest portion of the fight against decay.

Each spring and fall roofs should be carefully examined by a reliable roofer to ascertain the need of repairs. The repair bill can be kept down to a minimum and the necessity of a new roof obviated by the semi-annual inspection. The practical roofer will recommend the soldering of broken seams, the sweeping off of dirt and cinder accumulations (rust producers), and the touching up of broken points in the paint coating with Dixon's Silica-Graphite Paint. An evenly applied coat of Dixon's Silica-Graphite Paint every three years, is roof economy.

Dixon's graphite publications sent upon request.





WABASH RAILROAD TERMINAL, PITTSBURGH, PA.

Theodore C. Link, Architect.

Geo. A. Fuller Company, Builders.

Pennsylvania Steel Co., Steel Contractors.

Structural Steel Protected With Dixon's Silica-Graphite Paint.

#### PAINT FOR MILLS.

Mill owners fully appreciate the desirability of having their buildings present a well-kept appearance, but their chief difficulty has been to secure a paint that would not blister and crack in a season or two.

To preserve and beautify structural iron, metal surfaces and smoke-stacks, a paint must be used which will not be destroyed by continued exposure to the rust-forming elements, heat of the sun and rain.

The expense and annoyance of frequent repainting can be avoided by the use of a coating of flake graphite and silica for pigments, and boiled linseed oil for a binder, and a product of this nature is made under the trade name

of Dixon's Silica-Graphite Paint.

This product has certain economical features over the ordinary paints, in that the flake graphite is a lubricant, and in its use as a pigment the paint is brushed on with great ease, saving materially in cost of labor and brushes, and gives a covering power of 500 to 600 square feet to the gallon for a good coating. Dixon's Colors have given a service of seven years on the iron covered elevator building of the Kentucky Public Elevator Co., Louisville, Ky., eleven years' protection without repainting on the one mile, four track wide steel elevated structure of the Pennsylvania Railroad Co., Jersey City, N. J., and five years on the 150 feet steel smoke-stack of the Columbus-Edison Electric Light Co., Columbus, Ohio.

A practical little folder entitled, "Colors and Specifications," illustrated with five different types of steel construction, and containing suggestions for construction and maintenance painting, with the four colors of Dixon's Silica-Graphite Paint, can be secured by addressing the Joseph Dixon Crucible Co., Jersey City, N. J.

Franklin, N. H.,

Oct. 15, 1903.

The Dixon 'Eterno' pencil which you sent me free for trial I find the best that I have ever used.

Thanking you for the above, I remain,

Herbert J. French.

Ware, Mass., Oct 16, 1903.

When I write I want to leave a mark that is instantly black and permanent. I rarely use a pencil, except when away from my desk, as I have found no pencils that meet my requirements fully, but I think I shall enjoy using your Dixon's 'Eterno' No. 2050, as it is black and permanent and withal writes as easily as my favorite pen. It is far better than the best writing and copying pencils I found up to this time. I shall ask our local dealers to carry it in stock.

(Rev.) O. J. Fairfield.



### THE NORTH GERMAN LLOYD TERMINAL.

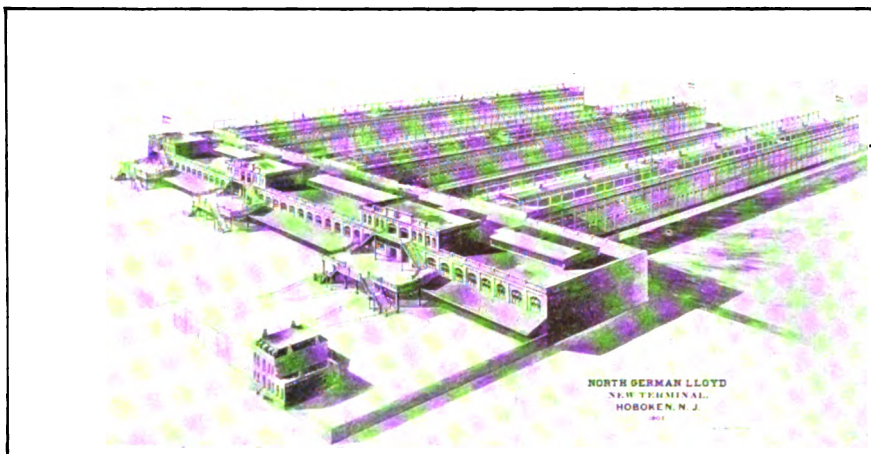
The North German Lloyd Steamship Co. are now occupying their piers 1 and 2 and the bulkhead building that have been in course of erection since the great steamship fire of June, 1900.

The North German Lloyd Terminal, Hoboken, N. J., was designed by Captain W. F. Whittemore, an engineer of wide experience in pier building and general waterfront

ing it impossible for them to buckle if exposed to fire.

A feature and one that will become popular is the Promenade Roof, entrance to which is by stairways at the Pediment Stories from the galleries and also by six electric elevators within the building. One can walk for 900 ft. and look down upon the great liners as they warp into or depart from their berths.

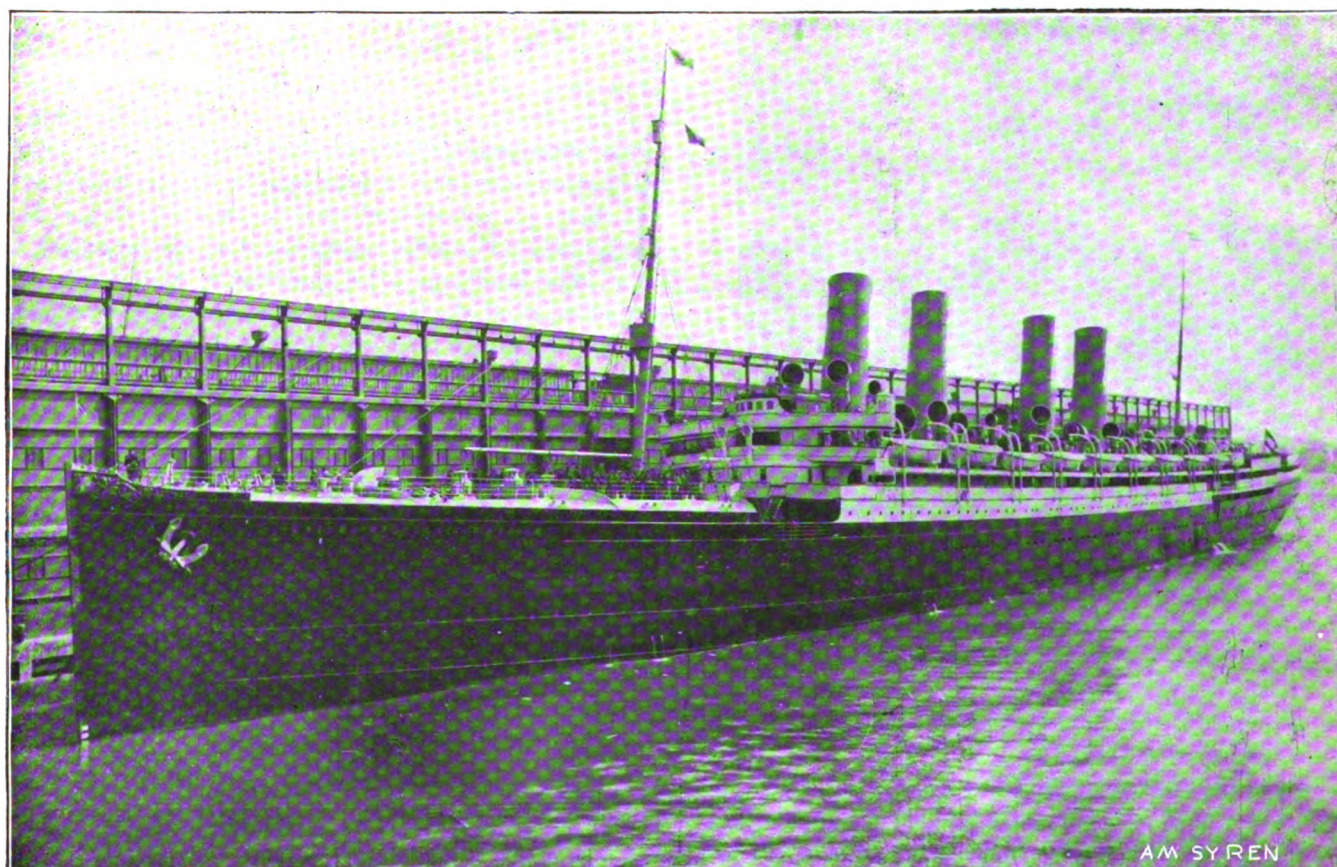
We illustrate a bird's-eye view of the terminal and the



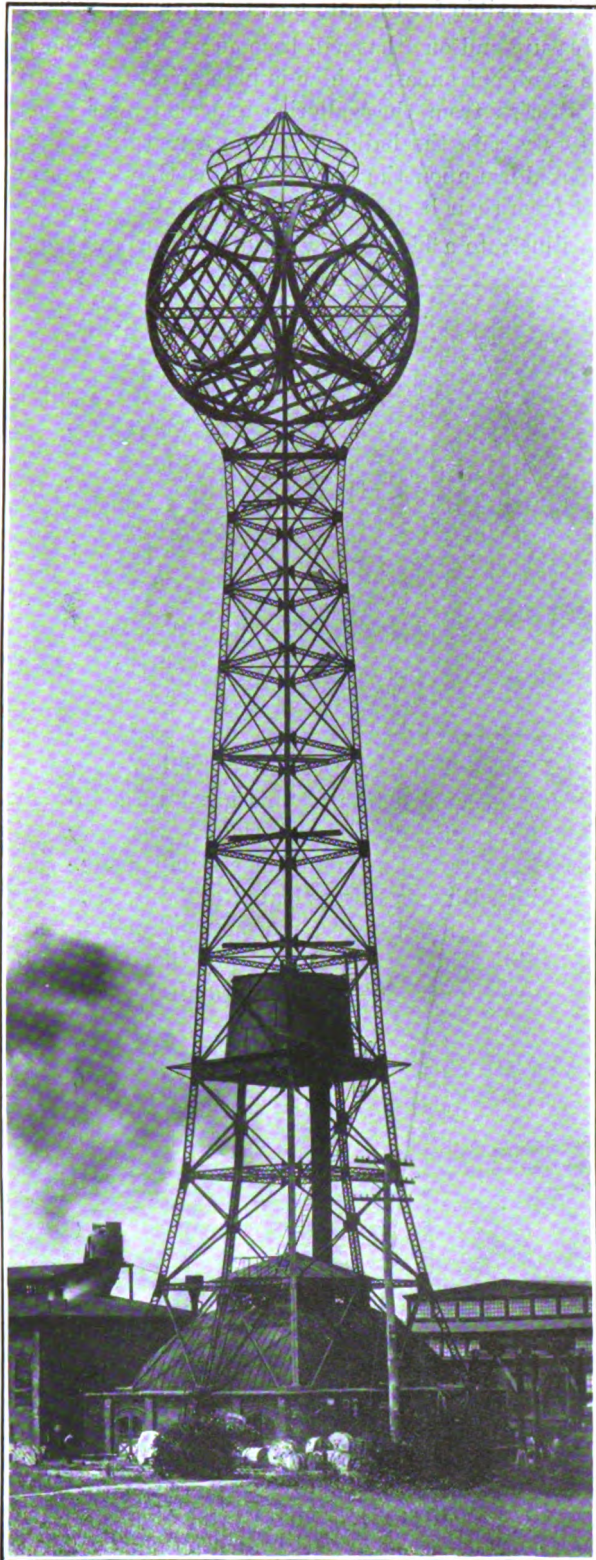
improvements. The piers are 80 to 90 ft. wide and 870 to 900 ft. long; the foundation being piles of heaviest construction, driven to an average of 75 ft. below high water.

The ingenuity and originality of the designer are displayed at all points in the safeguards against fire from within and ships lying alongside. The columns are filled with concrete and surrounded by a thick layer of the same material, the whole being protected by a steel jacket, mak-

ing it impossible for them to buckle if exposed to fire. In the construction of this great terminal, Dixon's Silica-Graphite Paint, Natural Color, was used for all structural steel work, column jackets and doors. At the present time, Dixon's Silica-Graphite Paint, Dark Red, is being applied to all exterior iron work by Stelling & Breitenstein, painters, under the direction of Captain M. Moller, Inspector of the North German Lloyd Terminal.







ENGINE HOUSE, CLOCK AND TANK TOWER,  
John Stephenson Company, Elizabeth, N. J.

It would require a good-sized book to describe, and in fact one has been written by Chas. Henry Davis, C. E., on the location, design and construction of the great industrial establishment of the John Stephenson Company, Car Builders, at Elizabeth, N. J.

The property contains 117 acres, and is improved with shops of the finest and most modern construction. Special attention was given to the economical handling of parts of the car in construction and for shipment of the finished cars.

Passengers on trains of the different trunk lines entering Jersey City and on trolley cars, have wondered and inquired as to the tall steel tower that can be seen for miles from many parts of New Jersey.

The illustration accompanying this article will tell that it is the clock and tank tower of the John Stephenson Company, Car Builders. The tower is designed to support a clock and 3500 lb. copper bell and frames for same weighing 36,000 lbs. total, at a height of 200 ft. above the base, and a sprinkler tank at 70 ft. above ground, weighing 240,000 lbs. A wind pressure of 35 lb. per sq. ft. was allowed at the floor of the clock. The base of the tower is 52 ft. square, tapering by a gentle concave curve on each leg, to 24 ft. square, 70 ft. up, where the sprinkler tank is located, thence 104 ft. more, narrowing to 14 ft. square, 174 ft. above the floor. From here by reverse curves, the four legs run up to the edges of the clock faces 25 ft. up, being 25 ft. square, and at clock edges, 17 ft. higher, 35 ft. square. From floor to top of clock roof is 275 ft. The total weight of the steel frame work is approximately 200,000 lbs.

It will interest the readers of GRAPHITE to know that this tower is painted with Dixon's Silica-Graphite Paint, Dark Red, for its protection and the effect. This paint is manufactured in four durable and pleasing colors for steel work — Olive Green, Natural or Graphite Gray, Dark Red and Black.

#### WHAT CAN YOU DO?

The Following is Part of an Editorial in "The Journalist," and what is Said of All-round Journalism May Be Equally Said of Almost Any Profession or Business.

The simple truth remains that natural aptitude directs every successful man's career on earth. All-around journalism is dying out fast. To know one branch of your profession, and that thoroughly, is now the great thing. I am firmly of the belief that the time is not very far off when the city editor will be asking the young man who is seeking employment not, what college did you come out of, but what can you do and what is your special sphere of usefulness? For a fire reporter, a study of the fire department in all its details must naturally be more useful than any other, while the closer the man who has to cover police can get to being a Sherlock Holmes the more substantial value he is to his paper.

The very meaning of the word education is the taking out of persons that which they already possess, but which is lying dormant. The boy who follows the machine may be, and very often is, the fireman of the future, but how many youngster's journalistic ambitions die out with the college or high school paper?

I am rather surprised to see that Mr. Pulitzer thinks so little of the business office. Without the business office where would his papers be to-day, or any other papers, for the matter of that?

SHARP (of the firm of Sharp & Jenkins)—"Why did you countermand your order for those fountain pens?"

JENKINS—"The agent took down my order with a Dixon Eterno pencil."





THE ST. JAMES APARTMENTS.

The handsomest of their kind in Philadelphia, Pa., are located on the S. E. Corner 13th and Walnut Streets.

The structure was designed by Architect Horace Trumbauer, of Philadelphia, and shows a 14-story main building, together with a 7-story addition.

Buff brick, Indiana limestone and terra cotta are the materials used for the exterior construction, while the interior is trimmed with curly birch and handsomely decorated throughout.

The building provides for 85 apartments with private baths attached. Every modern appointment has been installed to make the structure the most complete of its kind in the world.

The structural iron work of this magnificent building is preserved with two coats of Dixon's Silica-Graphite Paint.

### THE BOSS AND HIS HELPER.

The factory is run to make money.

The stockholders stand at the door and say, "Dividends." The Manager struggles for good prices so expenses can be made, with a margin over; something for the stockholder and something for the surplus, to tide over possible poor years, possible disaster. But this is not all of it. If this were all, the enthusiasm would soon spend and the retrogression commence.

Above surplus, above dividends, above all other considerations, should be two dominant motives. First, to make the best goods of his kind and, second, to make them at the lowest possible cost of production and at the same time

pay good wages. The lower cost of production should not come out of the wage earner, but should come from better machines — better managed, up-to-date machines, run by well-paid, up-to-date workmen.

As with the Boss, so should these two dominant motives prevail with his people — to produce the best goods, the best of their kind and at the lowest possible cost of production. This means the best management possible on the part of the Boss and a high degree of co-operation on the part of his helpers.

No machine should live if another — a new one — could do more or better work. No hand labor should prevail if a machine can be devised to take its place, and no machine should be run and no one allowed to run it, who could not extract from his machine its biggest and best daily output.

—J. A. WALKER.

### FACTORY TIPS.

President Elliot of Harvard says, "A man ought not to be employed at a task which a machine can be made to perform."

In the same vein the *Michigan Tradesman* says, "Every business plant has been made more profitable by the substitution of accurate, automatic machinery for hand labor and this not only, but later by the replacing of old machinery by improved machinery."

Again in the same line, the *Cash Register* people write that for inventions and for patents to protect the result, they spend about \$90,000 a year.

A slight variation of the same theme was expressed by the Manager of one of our large industries; to wit, they wished only such workmen as are fit for and on the lookout for promotion. This rule with them, he adds, is invariable.

The upshot seems to be that nothing in factory work is done right until it is done well, as quickly and as cheaply as the best equipped man with the best equipped machine can do it, until the maximum of work is turned out at the least cost and with the least waste.

—J. A. WALKER.

### DIFFERENT RESULTS FROM AN APPLE.

Mr. Kerr of the Westinghouse-Church-Kerr Company, addressing the Stevens Institute Graduating Class, said he believed the name of Adam, our traditional first parent, and Sir Isaac Newton were connected with an apple, but with marvellously different results.—J. A. WALKER.

### THE CIRCLE.

"In youth we dream that life is a straight line; later we know it to be a circle in which the present presses on the future, the future on the past."

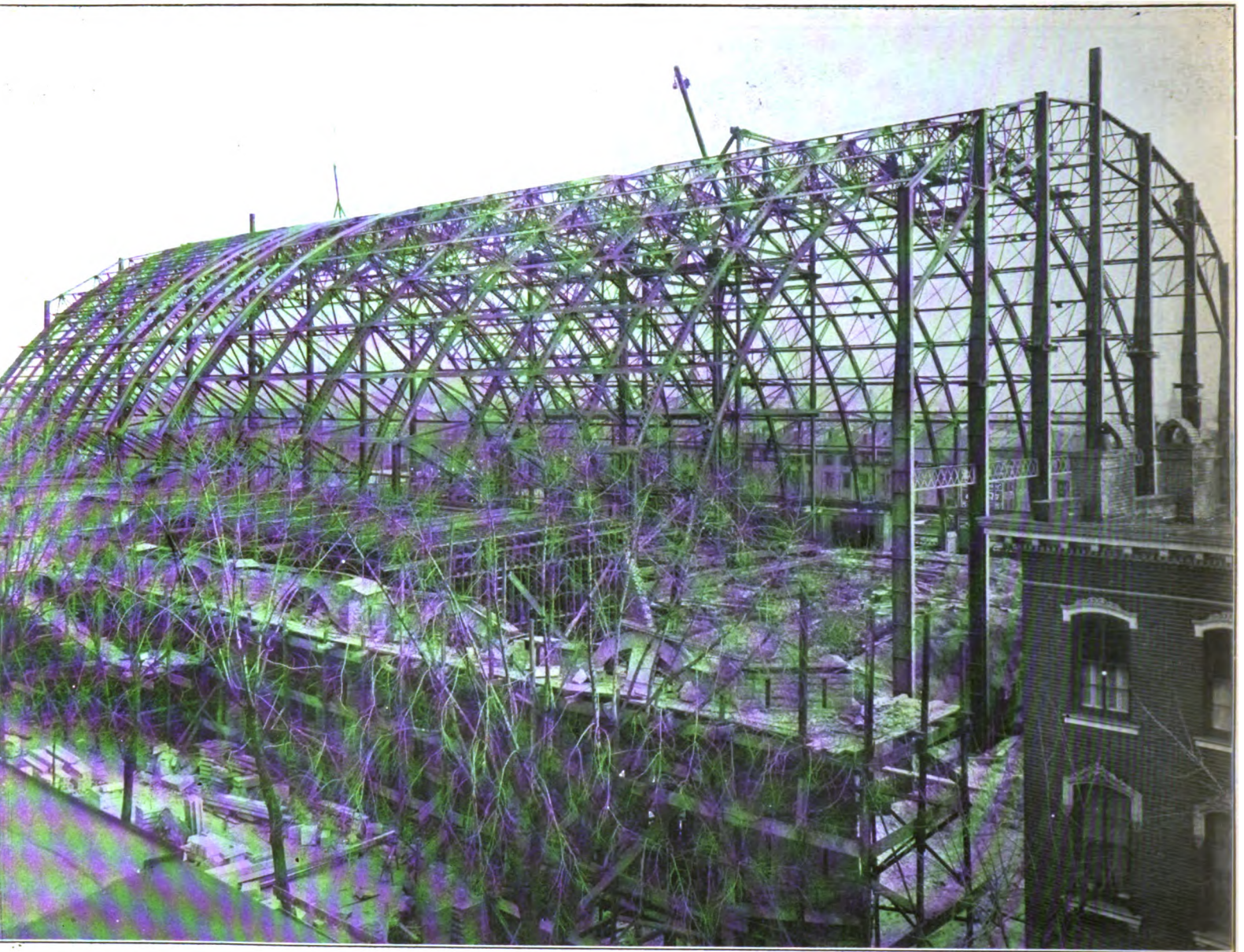
—KATHERINE CECIL THURSTON.

'Wilmington, Del., Oct. 24, 1903.

'Dixon's 'Eterno' sample pencil received and we find it gives excellent results in copying letters, etc.'

Wm. Lomb.





**THE FIFTH REGIMENT ARMORY BUILDING,  
BALTIMORE, MD.**

**Showing Roof Trusses and Main Columns During Erection.**

The Fifth Regiment Armory Building, Baltimore, Md., is one of the largest structures in that city. Situated on Hoffman street, it occupies a site measuring 354 x 284 feet. The cost of the building was approximately \$425,000.

A feature of the building is the drill-hall roof, the framework of which is made entirely of medium steel, excepting the lattice bars, rivets and lateral rods, which are of soft steel—all conforming to the standard specifications of the American Association of Steel Manufacturers. This roof covers an unobstructed floor area of about 199 feet wide and 293 feet long in the clear.

The structural steel and iron work of this massive building is protected with Dixon's Silica-Graphite Paint. It was required that the second coat of paint should be applied not less than ten days and not more than thirty days after the field coat.

Messrs. Wyatt & Nolting, Baltimore, were the architects of the building. The same firm of architects also designed the new Court House at Baltimore—one of the handsomest

in the country; the American National Bank, Richmond, Va.; and the Post Office Building at Norfolk, Va.

The structural work was erected by the American Bridge Co., under the direction of Mr. Paul L. Wolfel, Chief Engineer. Messrs. R. C. Sandlass and T. M. Kellogg were the consulting engineers, and E. M. Noel the general contractor.

**PROTECT AGAINST THE STORMS OF WINTER.**

The early fall is the season best suited for the application of paint to steel and metal surfaces.

Specifiers and users of preservative paint should have a copy of "Colors and Specifications," which is published for free distribution by this Company.

**Sewaren, N. J., Oct. 15, 1903.**

The sample of your 'Eterno' copying pencil received, and beg to say that it appears to fill the requirements of a first-class copying pencil.

**T. F. Zettlemayer, P. M.**

Dixon's graphite publications are sent free of charge to all who are interested in the subject of graphite.





### TRINITY BUILDING.

Broadway, Adjoining Trinity Church, New York City.

FRANCIS H. KIMBALL, Architect.

S. C. WEISKOPF, Engineer.

GEO. A. FULLER CO., Builders.

The Structural Steel Work Now in Course of Erection Is Being Painted for Protection With Dixon's Silica-Graphite Paint, Dark Red and Natural Colors.

### HARDWARE AND PAINT DEALERS.

Good sellers are to be found in the four colors of Dixon's Silica-Graphite Paint. Place your orders with us early, so that the fall painting season will find you ready to make prompt deliveries. Let us help your sales department with our personal letters to local concerns (names that you are requested to send us), mentioning that you carry Dixon's Silica-Graphite Paint in stock, and give prompt attention to inquiries and orders. Your talks, our personal letters and illustrated cards, with the merits of Dixon's

Silica-Graphite Paint, will win many good orders for you this fall.

We suggest special attention to securing Dixon Paint orders from officials in charge of town and county bridges; owners of manufacturing plants for steel smoke-stacks, roofs and iron work; colleges, churches and cemetery associations for ornamental iron fence protection; warehouse owners for corrugated iron work and shutters; and other lines of trade that are peculiar to your district.

Dixon's Silica-Graphite Paint makes a satisfied customer for your other products.





THE LAFAYETTE HOTEL, BUFFALO, N. Y.

Bethune, Bethune & Fuchs, Architects.

The new Lafayette Hotel was opened for the reception of guests June 1, 1904. The main entrance to the hotel faces Lafayette Square, the carriage entrance being on Washington Street, and leading directly to the Women's Reception Room and the three restaurants.

The location of the new hotel is the finest in Buffalo, as it fronts on Lafayette Square, with its Soldiers' Monument guarded by cannon and surrounded by flowers, and beyond the fine Public Library. The Transportation Club, of Buffalo, occupy the greater part of the sixth floor, and its rooms are models of comfort and harmonious decoration.

The exterior of the hotel in French Renaissance architecture, reflects highly to the credit of Bethune, Bethune & Fuchs, and they have been particularly successful in the artistic arrangement and decoration of the interior. Every wall decoration was selected to harmonize with the carpet, and the results suggest the taste of a private house. Throughout the hotel there are everywhere found the latest devices for adding to the comfort of guests.

The lobby is finished in Numidian marble and mahogany; the restaurant facing Washington Street, in a most artistic blending of brown and green, relieved by decorations in green and gold; the grill room on the Clinton Street side of the house in oak and Welsh tiling, with the walls above the wainscoting panelled in leather on which are painted scenes from 'The Merry Wives of Windsor.' The second floor is the banqueting room in soft tones and quaint carv-

ings of old ivory, and the Women's Parlor is dainty in silver and violet.

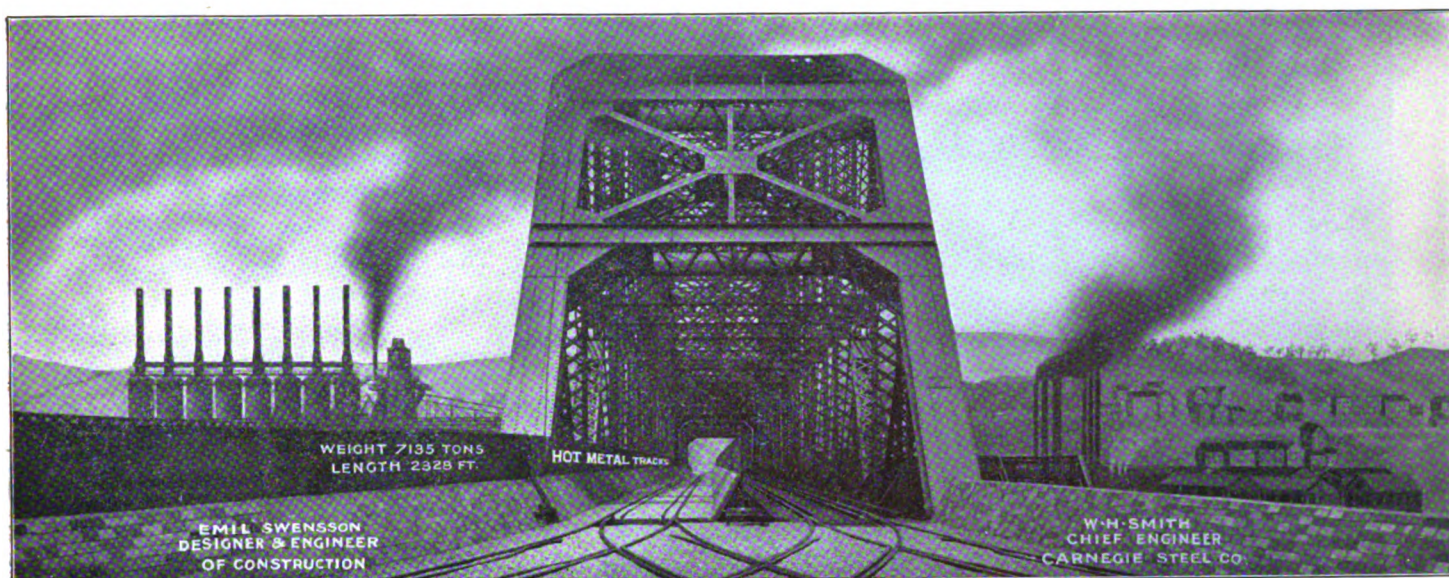
The cost of this new hotel was \$1,000,000. The Buffalo Structural Steel Co., who supplied and erected the steel work of the Hotel Lafayette, carefully followed the specifications and instructions of Messrs. Bethune, Bethune & Fuchs, architects, in the use of two coats of Dixon's Silica-Graphite Paint for all steel surfaces.

#### A. D. 2000.

Give me a spoon of oleo, ma,  
And the sodium alkali,  
For I'm going to make a pie, mamma;  
I'm going to make a pie.  
For John will be hungry and tired, ma,  
And his tissues will decompose;  
So give me a gramme of phosphate,  
And the carbon and cellulose.  
Now give me a chunk of caseine, ma,  
To shorten the thermic fat,  
And give me the oxygen bottle, ma,  
And look at the thermostat.  
And if the electric oven is cold,  
Just turn it on half an ohm,  
For I want to have the supper ready  
As soon as John comes home.—Anon.

"You raise fine horses in the blue grass region, I believe," said an English lady to a Kentuckian. "Yes, madam, but we raise something better there than horses." "What is that?" "Men," he replied.





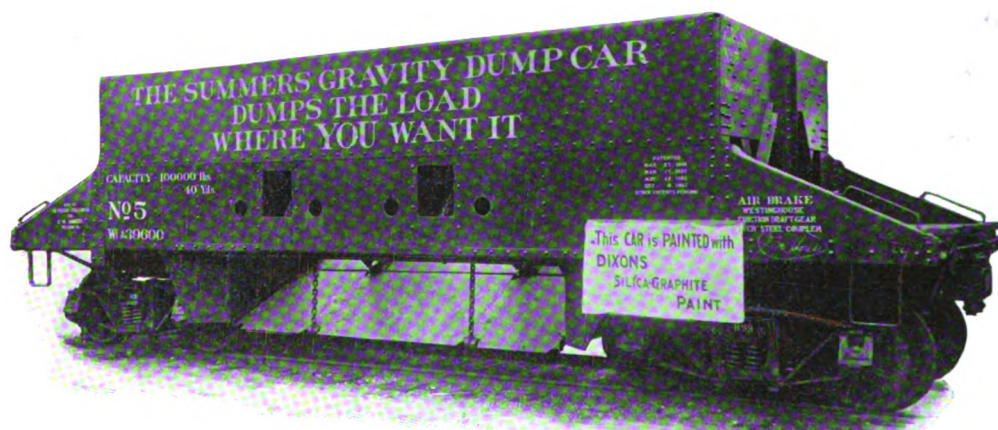
**HOT METAL BRIDGE, UNION RAILROAD,  
Pittsburgh, Pa.**

This great bridge was erected in 1900 by the Carnegie Steel Co. The designer and engineer of construction was Mr. Emil Swensson of Pittsburgh. It is familiarly known as the *Hot Metal Bridge*, but its official designation is the *Rankin Bridge*.

During the winter of 1900 and 1901, two coats of Dixon's Silica-Graphite Paint were applied for the protection of the steel work.

Mr. C. E. Brown, Engineer Maintenance of Way, of the Union Railroad, had this bridge examined during July of this year, to determine the condition of Dixon's Silica-Graphite Paint, and the official report states that the paint was found to be in *very good condition*.

The conditions of service are unusually severe, due to the heat and gases from the molten metal, sulphurous fumes from shifting engines, river craft, furnaces and steel mills nearby.



**THE SUMMERS GRAVITY DUMP CAR.**

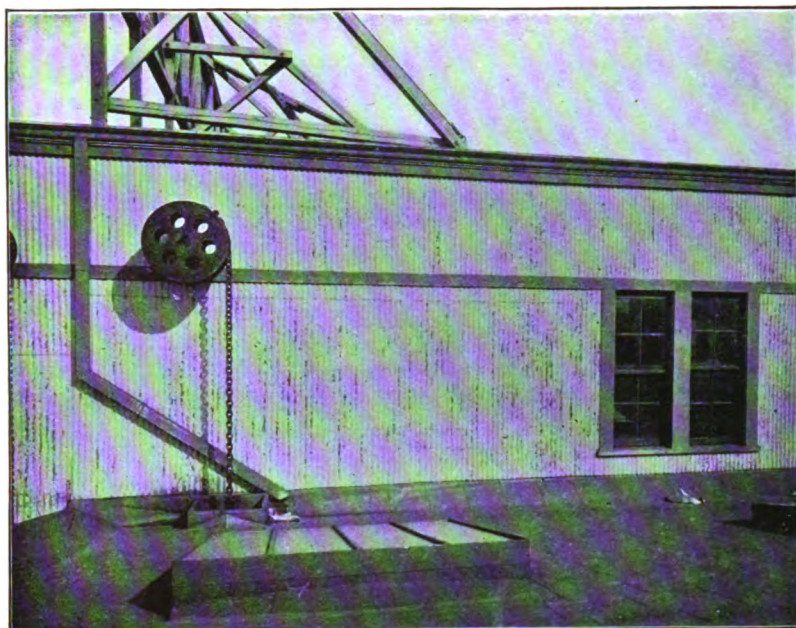
Mr. E. W. Summers of Pittsburgh, Pa., has invented the most economical Gravity Dump Car of the day, with a weight capacity of 100,000 lbs., and a cubic capacity of 40 yards.

The car which is illustrated herewith, is so constructed that it will dump the load all between the rail, all outside the track on either side, or on both sides as desired. It is so built as to dump any load in any of the above positions, the operator discharging the load and closing the doors from the operating platform at the end of the car. It is not necessary to stop the train to discharge the load or close the doors. The Chief Engineer of Construction on one of the large railroad systems said recently: "These cars will save their entire cost inside of four months."

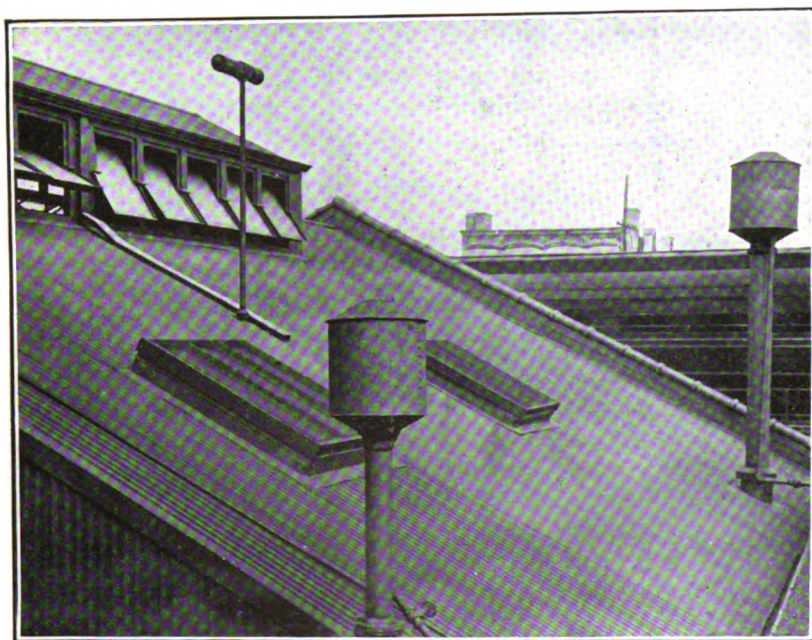
A feature of the car is the flexible arrangement of the

doors combined with rigidity of the car body, the sides of the car having ample depth with large top flange area to take care of the compression, due to vertical load, and the heavy box-like section of the lower part of the sides, combined with deep car beams, make a very rigid construction. The doors are locked and interchangeable with each other. Each door is supported on 4½ in. coil chains; the chains and shifting are protected from the lading by the double webbed floor beams, so that the doors only are exposed; the arrangement being such as to permit of rough usage and staying in service. Mr. Summers' personal experience in former years with the protective qualities of Dixon's Silica-Graphite Paint, caused him to select Dixon's Black to be applied to the above car which was exhibited at the Master Car Builders' and Master Mechanics' Convention at Saratoga Springs, June, 1904.





**GALVANIZED IRON SIDES, FERRY HOUSE, NORTH RIVER, NEW YORK.**  
**Primed With One Coat of Red Lead. Finished in White Lead. The Paint in Shreds at End of One Year's Service.**



**POWER PLANT, JOSEPH DIXON CRUCIBLE COMPANY.**  
**Galvanized Iron Sides and Roof Painted with Dixon's Natural. The Paint has Adhered Perfectly for Three and a Half Years.**

### THE COUNTRY PAPER.

Amid the pile of papers  
 That swamp my desk each day,  
 And drive me weak with clipping  
 And filing stuff away,  
 Comes once a week—on Thursday—  
 The quaint old four-page sheet  
 That's printed up in Pelham,  
 A drowsy county seat.

You see, 'twas up in Pelham  
 That first I saw the light,  
 And—well, my heart grows softer  
 And I feel my eyes shine bright;  
 Right reverent my touch is,  
 It spreads the columns wide,  
 The local's what I'm seeking—  
 The patented inside.

Ah, here it is—"The County,"  
 And "Jottings," "Local News;"—  
 You learn who's traded horses  
 And who have rented pews;  
 It tells about the schoolhouse  
 Where we used to sit and dream,  
 A-watching dust specks dancing  
 In the sunlight's shifty beam.

The sturdy names of boyhood  
 Come tumbling through our thought,  
 Of Tom and Brick and Patsey—  
 How we loved and how we fought.  
 The friends, when years grew graver,  
 Called now beyond our ken,  
 In the type-lines of the paper  
 They live and speak again.

Oh, toilers in life's workshops!  
 Are not those dream-mists sweet,  
 Which memory casts about us,  
 When past and present meet?  
 And so, I love that paper  
 From the village in the hills,  
 For the old life that it wakens,  
 For the weariness it stills.

—Nathaniel S. Olds in  
*Rochester Post-Express.*

Monrovia, Cal., Oct. 29, 1903.

The 'Eterno' is all that could be desired  
 for copying or other purposes. I sent an  
 order today for one dozen for private use.  
 W. A. Taylor.

Prophetstown, Ills., Oct. 14, 1903.

Your favor received. In reply will say I  
 think the 'Eterno' pencil super-excellent.  
 Will send you an order in a few days.  
 A. T. Taylor.

\$

**SAVE THE COST**

OF FREQUENT REPAINTING BY USING

**Dixon's Silica-Graphite Paint**

**For Steel Work and Metal Surfaces.**

JOSEPH DIXON CRUCIBLE COMPANY, JERSEY CITY, N. J.

**GRAPHITE LUBRICANTS.**—Publications issued by the Joseph Dixon Crucible Company always excel in elegance. That with the above title is not only no exception, but is peculiarly artistic and tasteful in design. There is a dash of warm and comforting red on the otherwise demure flexible covers and the pages within are an entertaining homily on the subject matter, historic, analytic, descriptive, etc.

—*Iron and Machinery World.*

# OUR LONDON PAGE

All Communications, Inquiries, Etc., relating to this Page should be addressed to Joseph Dixon Crucible Co. (Geo. W. Wollaston, Mgr.), 26 Victoria St., S. W., London.

## BRITISH RECORDS.

We understand that this number of GRAPHITE will be devoted almost exclusively to the Paint Question. We are writing this in London with no knowledge of the matter that will be inserted on the other pages; but no doubt some fine views will appear of important work on which our Silica-Graphite Paint has been used with the utmost satisfaction.

"They would use Dixon's!"

We started with the Paint here too recently to be able to show many similar views, as owners of structures protected with our Paint want to prove our statements as to its superior durability over all other paints, before giving us permission to make use of their names and structures. In certain cases, however, of difficult work where ordinary paints have a very short life, it is possible to decide in quicker time; and below is a letter just received by Mr. M. P. Galloway, our agent in South Scotland.

### PROTECTIVE

Bow Hill Coal Co., Fife, Ltd.  
Cardenden, Fife,  
June 9, 1904,

It gives me the greatest pleasure to inform you that Dixon's Silica-Graphite Paint with which you have supplied us for the last three years has given utmost satisfaction, and I find it is the best for painting iron work for both above and below ground that we have ever tried.

(Signed) R. A. MUIR,  
General Manager.

### PAINTING.

We also append an interesting report from our agents in North Scotland, Messrs. Wm. Riddell & Co.:

"We herewith enclose order for some more Paint, etc., which we will be glad if you can ship by Saturday's steamer. We have a fair stock of all kinds except those now ordered, but we think it advisable to have some more No. 3 Red Paint on hand in view of the fact that we have at last got the Corporation Gas Engineer here to adopt

this for some of his

## GAS HOLDERS,

and he may require more at any moment when weather keeps fine. The tests he made of your Paint some 2 years ago on a small holder and on iron work, where no other paint stood any length of time, have turned out so satisfactory that he decided to adopt it on a more extensive scale. We have sent him within the last 5 or 6 weeks 100 gallons No. 3, and he will probably require a further 200 gallons during the season."

We like that style of writing!

"You will also be glad to hear he is so well pleased with your Paint that he has specified it to be used for painting some large

## STEEL PIPES

he is having made in Birmingham. Every week our travellers bring us in equally favourable reports as to the satisfactory results our customers have obtained by using your paint. It was at first hard work to convince many of them that it has all the merits claimed for it, but they now, without exception, readily admit we had not said one word too much in its favour. We can point to any number of

## CORRUGATED IRON BUILDINGS

in our district, where to-day your Silica-Graphite Paint is as good as when put on 2 or 3 years ago.

"We are having very fine painting weather, and meantime have our usual squad of men busily employed painting."

The concluding remarks of our Aberdeen agents recall the splendid work they have done in the last two or three seasons with our Silica-Graphite Paint. They have employed a complete staff of painters, and tendered on the whole work of labour and material, and, owing to the great covering capacity and easy application of our Paint, with the consequent saving in cost of labour, have been able to outbid all of their competitors. Our representatives who have been on the spot report (with perhaps a little natural exaggeration) that "the entire district of Aberdeen is basking in the Dixon Paint Colours" applied to the many iron structures there.

N. B.—Aberdeen's a handsome-looking place!

There are still some people, we believe, who cling tenaciously to red lead and oxide paints. To such people we would say: Compare as below, and then consider which is the best—and the cheapest—paint to adopt:

Cost of labour.	} Every 2 or 3 years.
" " red lead and oxides.	

Cost of labour.	} Every 5 or 6 years.
" " Dixon's Graphite Paint.	

## A TRUE SILICA-GRAPHITE PAINT.

Explained by Mr. R. H. Fisher, of Dixon's Chicago Office.

In selecting a paint for the preservation of steel and other building metals, the first consideration must be the purity of the ingredients. The vehicle must be only the purest of fire-boiled linseed oil, for eventually the life of the paint will depend, to a large extent, upon the oil. The pigment must be one that will not undergo chemical change under any condition, it must assume such physical form that it may be made to protect the oil or binder, and at the same time readily shed water, also it should work easily under the brush, thus insuring a good covering capacity.

The paint formed by such materials should shed water readily at all times, and should resist such corrosive action as would be likely to occur in a building or on any exposed work.

On enclosed work, all of the paint is subjected to alkali, and in nearly all buildings the basement and first two stories are subjected to the action of such powerful corrosives as the sulphurous fumes produced by the process of combustion, which, owing to their high rate of diffusibility penetrate to every portion of these floors.

On exposed work the paint is subjected to the constant abrasive action of the elements, to alkalies and sulphurous conditions.

With the foregoing in view, we contend that Dixon's Silica-Graphite Paint fully meets all of these requirements. This graphite is a natural product mined by the Dixon Company at Ticonderoga, N. Y., and is the *only* pigment of its kind known to exist. It assumes the flake form in its physical structure and from this fact alone (if for no other reason), comes its great value as a paint pigment. There is no known solvent for this material, nor is there any chemical reaction that will affect it. Owing to our special process of milling we are enabled to obtain a particularly finely-divided product. This, together with its other properties, makes an *ideal* pigment.

The amount of silica present is controlled perfectly, and only sufficient of the material is added to thoroughly fill the oil. It is of such adaptable structure that under the process of milling to which it is subjected, it works perfectly with the flake graphite pigment. The oil used is only of the purest grade of well settled and well boiled linseed oil, and is very carefully inspected and tested by chemical experts. The small percentage of drier used is the very best procurable.

Dixon's Silica-Graphite Paint comes ready to apply, and only in original packages. It is the result of over forty years of constant endeavor to produce the best article possible, and behind every gallon is that well known Dixon pride of manufacture. The paint spreads easily under the brush and readily covers 500 to 600 square feet to the gallon. It does not require any elaborate specification for shop or field mixture, and avoids the attendant evils of poor materials and poorer results.

In accordance with the physical law, that all particles held in suspension assume positions in the direction of the lines of least resistance, it follows that the flake particles of this pigment, under the sweeping pressure of the paint brush, lie flat against the surface over which the brush is

moving. The flakes overlap one another, forming layers—the number of which is practically unlimited, being confined only to the number of coats and the thinness of the flakes.

After the paint has set and the surface gloss of oil has been destroyed, the outer layer of flakes is exposed. As the flakes are absolutely inert, it becomes a question of reaching the binder, which will in time lose its siccative or binding quality and release the flake, this particle having practically but two dimensions (length and breadth) leaves no cavity or pocket in the film, which therefore continues to shed water perfectly down to the last layer of pigment. This process of removal, owing to the intricability of these flakes, is, as you can see, a very slow one. Compare this with every other pigment ever sold in so-called protective coatings. Without exception they occur in one or more of the following forms, viz: cubical or spherical. When the binder releases one of these particles a pocket of exact shape remains, in which moisture is retained, thus preventing the rapid shedding of water and removal of corrosives such as alkali, sulphides, etc. These compounds are destructive to the binder and once firmly seated in such pocket will rapidly destroy the paint film.

There are authentic instances of twenty-five years' duration and in just the surroundings as regards moisture and sulphurous fumes that would utterly destroy any other paint, where Dixon's Silica-Graphite Paint is wearing perfectly, and, at the same time resisting atmospheric action.

Some pigments put upon the market are chemical compounds, for instance—the oxides and carbonates of lead, oxides of iron, etc., and as such under the inexorable laws of chemistry, are readily acted upon and during reaction either an increase or a decrease in volume takes place, both of which would militate against the film. The amorphous varieties of graphites are exceptions to this, but assuming the shapes they do are practically valueless as protective pigments.

In the past Red Lead has been largely used as a protective coating. The material is an oxide of lead and as such is readily acted upon by the sulphurous compounds, becoming a sulphide and taking on an increase of about 30% in volume during the reaction, which is sufficient to disrupt the paint film, also it is approximately cubical in shape. When a steam plant is placed in operation in a building, sulphurous conditions prevail and Red Lead immediately becomes anything but protective. The material is very dense, and is therefore hard to apply, requiring constant stirring. It must be mixed in exact proportions just before using. When allowed to stand after mixing it will quickly "set" and once this occurs, advocates of the material will tell you it is valueless. It is very difficult to apply, and has a very decided tendency to "run" even under the most skillful treatment. These faults, together with great cost, make it a rather undesirable material to use.

At the present time the market is flooded with so-called Graphite Paints, most of them composed of other forms of carbon and in every case are of amorphous structure. They may assume approximately cubical or spherical forms, and as such are anything but ideal paint pigments, from the fact that under wear and tear the particles are removed



from the binder leaving cavities or pockets. This prevents the paint film from readily shedding water, and in fact each pocket holds the moisture and with it every known corrosive element present in the air or water. This is the primary weakness, then comes the element of cheap composition wherein cheap oils, cheap driers, and cheaper pigment play their individual parts. Chemical analysis of these paints show, that very few (if any) contain more than 16% of graphite or carbon, and *that* usually of a very low grade. All of them have been placed on sale within the last fifteen years, and are made by houses that make many grades and kinds of paint. The best one of these paints is sold as "Pure Graphite," while eminent geological authorities pronounce the raw product—"A Carbonaceous Shist." If the "Best" is a material of that sort, what must the "Worst" be?

ROBERT H. FISHER.

### A TEST SCHEME FOR PROTECTIVE PAINTS.

Suggested to the American Society for Testing Materials, by  
Mr. Malcolm MacNaughton, M. E.

In outlining a test scheme for protective paints, the following points are to be considered:

- Cost.
- Application.
- Drying.
- Adhesion.
- Elasticity.
- Porosity.
- Resistance to Mechanical Injury.
- Permanency.

1st—Cost. This point may or may not be included in a scheme for testing paints. It is properly included when the test is made by the person who is directly interested in the economic side of the question, and may properly be left out by him who has to determine only the value of the paint as a protective coating.

2nd—Application. This bears on the facility with which the coat may be applied, whether it may be properly applied over other and different coatings, whether it may be applied at all ordinary temperatures, and whether or not any special treatment of the surfaces is required. Knowledge on these points is only to be had by actual trials.

3rd—Drying. Continued observation during an actual trial will give all the information necessary on this point. But it is necessary that observations be made up to the time that the paints are actually hard and dry, because it may happen that one paint may begin to dry on the outside more rapidly than another which may finally pass it and become dry first.

4th—Adhesion. This is a most important point, it being self-evident that any paint to protect must stay in place. Relative adhesion, when decidedly unlike, may be detected when the paints are fresh by simply peeling off at the point of a chisel. But adhesion must persist throughout the life of the paint, so that it becomes necessary to test the paint films after having given them somewhat the effect of age. Probably as fair a way as any, to secure this effect, is to subject plates of painted iron or tin to repeated alternations of heat and moisture. Tests for adhesion should

be made before any others, as a paint coat which lacks this quality, when new, should be immediately condemned.

5th—Elasticity. This quality enables a paint film to accommodate itself to its base during changes as a result of variations of temperature or form. When we consider the great difference in the coefficient of expansion between the metals and oils, we see that, unless there is a certain degree of elasticity, rupture of the paint films must occur. Films of the paint, detached from their support, are best for determining relative elasticity. The simple test of bending is enough to give information where the difference in elasticity is enough to be of importance.

6th—Porosity. Since iron does not rust except in the presence of moisture, it is important that the protecting film of paint should be non-porous in the highest degree, without the sacrifice of other desirable qualities. This is a test which should be applied when the paint is in its most perfect condition as a protecting film. It is not correct to test by repeated evaporations of water in a painted dish, because the deterioration of the paint by these repeated evaporations is also involved. The method in which postage stamps painted on glass, covered with a couple of coats of paint, and when dry, immersed in water, seems good. This may not be exactly correct in its technical aspect, but should give approximately correct results when made for comparative purposes.

7th—Resistance to Mechanical Injury. Tests to determine this need be made only in special instances where conditions are such that protective coverings may fail from this cause. Where such a test is advisable, it is easily made by allowing a streak of sharp sand to flow over the painted surfaces from a hopper, the sand being returned from time to time. The test is easily made more or less severe by varying the height of fall and angle at which the stream strikes the plate.

8th—Permanency. Protective coatings may be assured as quickly reaching their condition of greatest efficiency. We may consider that when a paint has become what we call dry, it has reached that condition. From that point of great efficiency, there is a gradual, more or less rapid progression toward ultimate failure. The paint in which this progression is slowest is to be taken as the most permanent. The value of this function must be determined entirely separate from the determinations of the other qualities, and the test should be so conducted as to bring about a slow change, rather than to destroy. The test should be made with especial reference to the conditions under which the paint is to be used. The test should be made with paint films which have been detached from their support. They should be of sufficient thickness, not less than two coats, and probably three would be better. They may be prepared on thin zinc plates, the zinc being dissolved off by dilute sulphuric acid, or they may be prepared on cardboard covered with a paste of dextrine. When dry the whole is immersed in water and the support soaked until it may be separated from the film. Films of various paints to be compared are subjected to the same set of conditions and their relative action observed.

It is much easier to detect changes in films separated in this way than when attached to their supports.

The foregoing tests, while simple and probably capable of much improvement, are sufficient to give considerable information when made carefully for comparative purposes, yet at the same time they do not give exact values. Under any one test in question, it will be easy to show that one paint is better than another, but not so easy to show just how much better. Judgment in this matter can only come with experience. It is to be supposed that any test of paints is for the purpose of selecting the one most suitable for some set of actual conditions, and that these actual conditions indicate the relative importance of the tests to be made.

Rate of drying, Resistance to Mechanical Injury, Porosity, Adhesion, etc., may each in turn be the feature of great importance. It would certainly be an absurdity to lay much stress on relative porosity of a coating which was to be applied to bridges in Arizona, or pay much attention to the matter of elasticity in a paint for iron work in a damp sub-cellar.

Unfortunately, no paint has yet been discovered which possesses pre-eminently all the qualities needed for iron and steel protection, so it becomes necessary for us, if we hope to get best results, to determine in some way what particular product is at least as good as any other for the case in hand. Our tests may not always indicate the very best, but they will undoubtedly put aside the very worst, and this result alone will be a great gain. It seems to be entirely within the scope of this committee, in addition to suggesting methods of making tests, to suggest also a scheme for combining the values obtained by such tests into an equation, the solution of which will give relative values in particular cases. For instance, the efficiency of a coating may be represented by an equation where one side consists of the sum of the values for the various functions previously determined by experiment, each multiplied by a factor, which represents its particular importance in any specified case. Thus in different cases we may take the factors as follows:

Cost.....1	Cost.....1	Cost.....1
Application..1	Application..1	Application..1
Drying.....4	Drying.....1	Drying.....1
Adhesion....2	Adhesion....1	Adhesion....1
Elasticity...1	Elasticity...1	Elasticity...1
Porosity.....2	Porosity.....1	Porosity...10
Resistance to Mechanical Injury } .3	Resistance to Mechanical Injury } .1	Resistance to Mechanical Injury } .1
Permanency..2	Permanency..6	Permanency..1

The first set might be used in testing paints for steel cars, the second for highway bridges, and the third for iron work in locations subjected to steam and acid vapors.

Such a scheme will have its limitations and variations due to the personal equation of the man operating it, but eventually there would come a certain degree of standardization.

These suggestions are presented with the idea of showing the advisability of a scheme which will necessitate the consideration of all the points involved.

With regard to time tests, not much need be said except that the pieces to be exposed should have at least 2 sq. ft. of area on each side, and should have two coats, the second

applied only when the first is dry. The second coat should be dry before exposure occurs, and the exposure should be the average conditions it is desired to protect against. The test piece should consist of vertical and horizontal parts, the latter to serve as a resting place for water, cinders, dust, etc. Where such pieces have been examined from time to time, such places should be covered by paint to prevent extension of corrosion from the damaged surfaces. This patching up paint should be of a different color than the paint which is being tested, to avoid any confusion.

### PAINT FOR GALVANIZED IRON.

Owners and painters in every city and town, complain of the rapid destruction and ragged appearance of paint on galvanized iron sides of warehouses, piers and cornices of buildings.

We have a great deal of galvanized iron work in the ornamentation of our factory buildings, and have no difficulty with the paint peeling and blistering. Before painting our galvanized iron, we brush it thoroughly with a stiff brush, and apply a well brushed-on coat of Dixon's Silica-Graphite Paint. A simple, cheap and effective method.

We have our own experience and that of hundreds of customers to prove that Dixon's Silica-Graphite Paint is a particularly tenacious and lasting coating on galvanized iron surfaces.

A pleasing effect is secured by using two Dixon colors for body and trim.

Dixon's Silica-Graphite Paint is manufactured in the Olive Green, Natural or Graphite Gray, Dark Red or Black.

Owners and master painters are invited to test this paint on galvanized iron surfaces to demonstrate to their satisfaction that it is indeed the ideal paint in adhesion and lasting qualities.

### SAFETY OF LIFE.

Railroad passengers, fearful of collisions and accidents occurring in railroad travel, oftentimes give more attention to little details concerning their safety while enroute than is generally credited.

Passenger agents tell us that they quite frequently have requests for booklets, illustrating their bridges and signal apparatus. Ticket agents sell daily a great many short-timed accident policies.

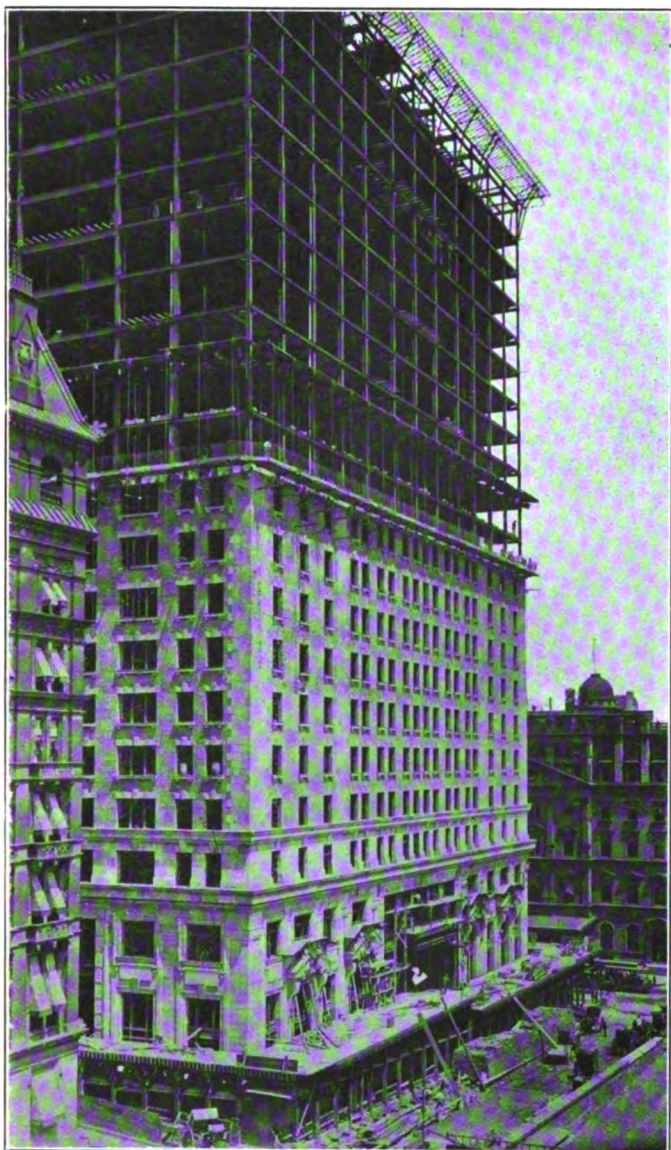
The railroad making a feature of giving wide publicity to illustrations of bridges and signal apparatus, showing their precautions in the way of the most modern type of bridges and signal arrangements for the protection of life, will secure the confidence and support of travelers.

The deterioration of steel bridges and signal supports by rust has caused anxiety to many railroad officials. A protective material that will absolutely prevent rust for a long period of time, is now quite extensively used in the Construction and Maintenance Departments of railroads, and is known as Dixon's Silica-Graphite Paint.

Carthage, N. C., Oct. 24, 1903.

I have received your sample 'Eterno' copying pencil. Please accept my thanks. It fills every requirement and is up to date.

H. B. Gagle.



### **HOTEL BELMONT, NEW YORK CITY.**

**WARREN & WETMORE, Architects.**  
**F. A. BURDETT, Consulting Engineer.**  
**MARC EIDLITZ & SON, Contractors.**

At the S. W. corner of Park Avenue and 42nd Street, New York City, there is now being completed a twenty-seven story fireproof hotel, which extends from 41st to 42nd Streets.

The design is of particular interest on account of the magnitude of the structure; the provisions made for large, unobstructed rooms and for wind bracing; the system of plate girders above the street level which carry many stories of heavy columns; and because five of the twenty-seven stories are built below the surface of the street in a pit excavated in solid rock.

The four tracks of the Rapid Transit Railway, which emerge near the hotel from the Park Avenue Tunnel, turn into 42nd Street with a minimum radius of 180 ft., and pass under the corner of the building with their rails at a level about 25 ft. below the surface of the street. The subway structure here rests on solid rock and is built with steel columns and roof girders filled in with brick and concrete. The roof girders are made special, and are proportioned to carry above the tracks a number of main

columns of the building, which are twenty-three stories in height and have loads of as much as 2,360,000 lbs. each.

Unusual conditions and requirements were met with in the execution of the work, which was of especially difficult character for the substructure.

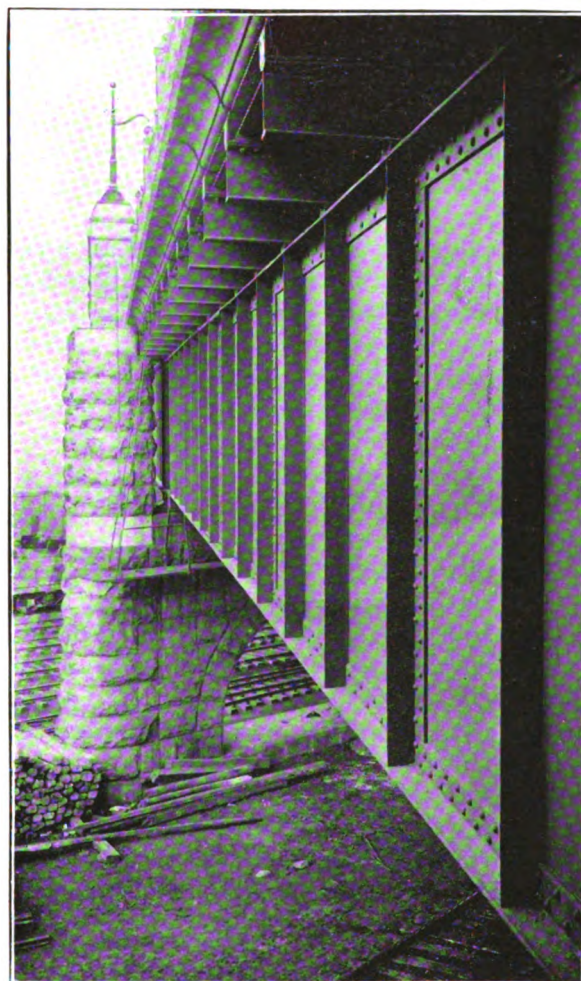
—*The Engineering Record.*

The structural steel work of this magnificent hotel is preserved against corrosion with Dixon's Silica-Graphite Paint, Natural and Olive Green Colors.

### **WILLIS AVENUE BRIDGE.**

Crossing N. Y., N. H. & H. Freight Yards and Harlem River, New York City.

The girders of the Willis Avenue Bridge are 15 ft. in height. They were painted during erection in 1899 and 1900 with two coats of Dixon's Silica-Graphite Paint, Black.



The above view of one of these girders was taken in April, 1904, and shows the absolutely perfect condition of Dixon's Silica-Graphite Paint after four years' service. All of the girders were carefully examined at the time the photograph was made, and Dixon's Black on the rivet heads, angles, flanges and webs, was found to be in an unbroken condition, and giving true protection to the steel. These girders are fully exposed to sea air and to sulphurous fumes from shifting engines.

Dixon's graphite publication are sent free of charge to all who are interested in the subject of graphite.



## PACKING CYLINDER HEADS AND VALVE STEMS.

By W. H. WAKEMAN.

When the head of a steam cylinder is fitted to the end of a cylinder so nicely that steam cannot escape through the space between them, we call it a ground joint, because the two surfaces are ground together until the fit is perfect. Of course, it is nice to have charge of machinery that is carefully fitted up, for, as a rule, it makes less labor and care for the engineer.

It does not cost much to make a ground joint on a cylinder head, as it is done before the studs are put in, when it can be turned at pleasure. If a similar joint is to be made on a steam-chest cover, or any other square plate, it becomes necessary to file and scrape the surfaces until both are perfectly true; then, when they are brought together, there can be no leak.

I have been disappointed in some ground joints, because they did not prove as durable as I anticipated. Hot cylinder oil under pressure will find its way into a very small crevice, where sediment from it is left, until the head is removed for some purpose. If it is replaced without being cleaned thoroughly, it is almost sure to leak, and the average engineer has neither the time nor the tools with which to repair it.

Many of them have not had the instructions necessary to enable them to do the work properly, but then it is not good policy to make that point prominent, so it is only mentioned as a side issue.

There is a right and a wrong way to clean a ground joint after it is taken apart, and it seems to be very natural for some of us to do it the wrong way. It is very easy to take any old file that may be at hand, and scrape the surfaces with it, and it is quite possible to get them clean too, but when we consider the very small depression that will cause a leak between two rigid iron surfaces, it is plain that a ground joint may be quickly ruined this way.

When a cylinder head is first taken off, both of the ground surfaces should be coated with kerosene oil, and left for several hours, or until they are to be put together again. A dull knife may then be used to scrape off any sediment that is found there, after which every inch of the surfaces should be rubbed by the naked hand, adding a little kerosene oil. Do not rub waste over the surfaces, as it is sure to leave lint there that will be as bad or perhaps worse than the sediment.

One of the surfaces should be given a light coat of good cylinder oil.

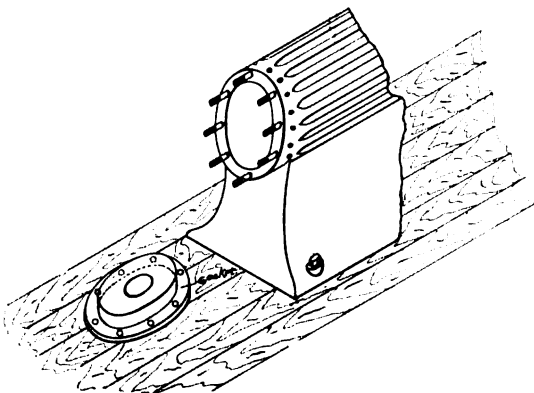


Fig. 1.

During the first few years that I enjoyed the honor of being called an engineer, my engine was not fitted with ground joints, consequently every time that a cylinder head was removed, a new gasket was required to replace one that was destroyed, and it spoiled a fair sized piece of packing to make it, but when I learned to use Dixon's Flake Graphite mixed with cylinder oil, on one side of my gasket, it could be removed many times without spoiling it. See Fig. 1.

If a sheet of packing large enough to make a cylinder head gasket is not at hand some asbestos wicking will usually answer every purpose. Cut off a piece the right length, then remove say, two strands of it, for about two inches from each end, make a lap joint that will be no thicker than the rest of the wicking, and put it in place on the head.

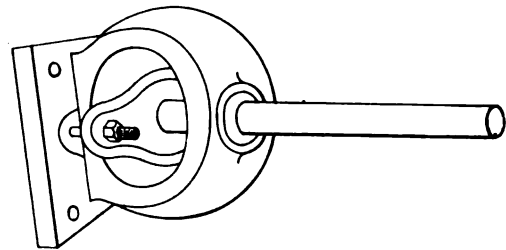


Fig. 2.

On taking charge of a Corliss engine several years ago, I found that the valve stems were in very bad condition. The outer end of one of these stems in its stuffing box is illustrated in Fig. 2. The valve crank is not shown, as it is unnecessary. Round, hard fibrous packing had been used, and kept in use so long that it had worn the stems badly, hence it was difficult to keep steam from blowing out at these points. Asbestos wicking did good work and was used for several years, but it was renewed once in six months.

Fig. 3 illustrates the valves of a Putnam engine forming part of my plant. These are of the double beat poppet type, the stems working through vertical stuffing boxes. They

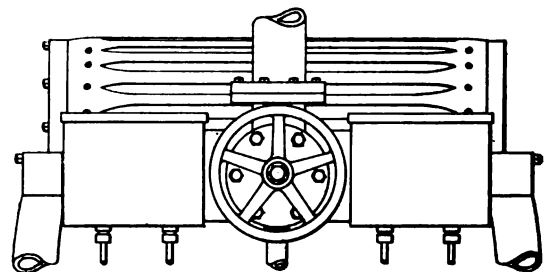


Fig. 3.

are lifted by cams, and caused to fall by the force of gravity, consequently they must move easily or else they will not work properly.

Probably there are several kinds of packing that would fill every requirement for this place, but I have tried only one during the ten years that I have had charge of the engine, and that consists of asbestos wicking thoroughly coated with Dixon's Graphite and it is perfectly satisfactory, therefore I find no need of making a change.



Engineers are sometimes troubled to keep such joints packed so that they will not leak steam, and still allow the stems to move freely, but much of the dissatisfaction is caused by failure to renew the packing in time to prevent it from becoming hard, hence the stems are either scored or else worn tapering, and it does not require a mechanic to see that while in such condition it is impossible for them to be satisfactory.

The two kinds of valve stems above mentioned are very different, because one has a semi-rotary motion, while the other slides like a piston rod, yet the asbestos wicking thoroughly coated with graphite gives excellent results in both cases.

It is a good plan to take several strands of this wicking and make a "rope" of suitable size for the stuffing box to be packed, but each strand ought to be coated separately. By partially untwisting a piece, it can be easily broken, and this is better than to cut it off square, because when broken the ends are left tapering, so that when put in place they lap over each other and make a ring of uniform size. Of course, it is possible to make the rings the right length to exactly encircle the stem to be packed, but it requires care to do it, and in the rush of work found necessary in many plants, such small details are overlooked, yet they form an important part of the successful steam engineer's duties.

There is another kind of valve stems that merits special notice, as they are used much more extensively than either of the foregoing. I refer to the globe, gate, angle and cross valves found on the steam and hot water piping of every steam plant.

Tons of packing are used every year on these valve stems, and the old-fashioned candle wicking is no longer satisfactory, as it does not last long enough to be a paying investment. Asbestos wicking furnishes the fireproof quality and Dixon's Graphite supplies the lubricant necessary, therefore this forms a combination that is hard to beat.

Some of these valve stems are fitted with a small gland under the nut, but in many others this gland is omitted. Where it is in use, the packing may be wound in either direction, but if the wicking is put directly into the nut it should be wound in the opposite direction from which the nut is turned when screwing it into place. If this plan is followed it prevents the end of it from being doubled up into a bunch when the nut is turned.

If you have never given this small detail due attention, just take a valve, put some wicking into the nut and observe the effect of winding it in each direction.

A GENTLEMAN writing from England about lead pencils, uses a postal card showing a very lovely picture of the "Menai Straights from Llanfairpwllgwyngyllgogerychwyrndrobwllandysiliogogoch." If Mr. Bert Skinner in his Maine trips finds anything to equal this, he is welcome to it.

Clemson College, S. C., Oct 16, 1903.

I received your 'Eterno' pencil a few days ago. It is the best copying pencil I ever used. Thanks for same. I will remain,

D. M. Fraser,

## Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, type-writer work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing.**

**Dixon's Plumbago for Powder Glazing.**

**Dixon's Plumbago Foundry Facings.**

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite.**

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Automobile and Bicycle Lubricants.**

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Motor Chain Compound**, for perfectly lubricating transmission chains.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

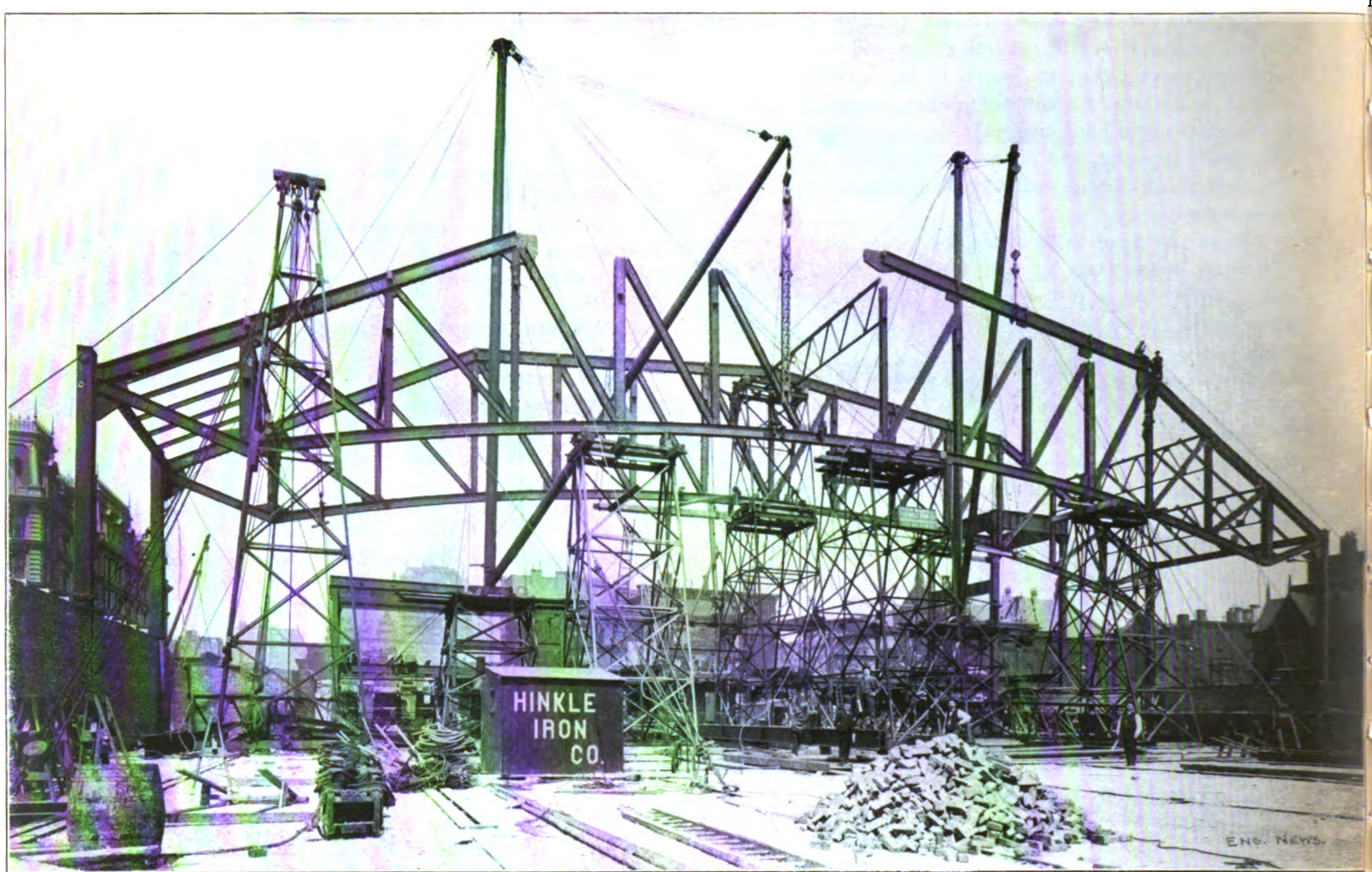
**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians.**

Special circulars with detailed information sent on request.



Clinton & Russell, Architects.

ERECTING STEEL WORK OF THE NEW SEVENTY-FIRST REGIMENT ARMORY, NEW YORK CITY.

The Steel is Being Painted with Dixon's Silica-Graphite Paint, Dark Red and Olive Green.

### COLORS AND SPECIFICATIONS.

An excellent little folder in duotone, illustrating five types of steel and iron construction. The Specifications suggest practical methods for construction and maintenance painting of steel and iron, based on our experience of 40 years as manufacturers of a protective paint and with an intimate knowledge of the paint requirements of civil engineers, architects, painters and the manufacturers and

owners of steel and iron structures. Accompanying the Specifications are the four shades in which we manufacture Dixon's Silica-Graphite Paint.

The folder will be sent to anyone wishing information on good paint and good painting.

### PAINTING SMOKE-STACKS.

Heated surfaces are most difficult to keep well painted and protected.

A good paint and a good painter is the prescription we offer. Dixon's Silica-Graphite Paint, Black, *ready mixed*, has cured thousands of smoke-stacks from that active destroyer, *Rust*. Dixon's Silica-Graphite Paint takes firm hold on the steel, and is not easily dislodged.

Dixon's pigments are inert and unaffected by heat or gases. Mixed in correct proportions with best boiled linseed oil, a tenacious, elastic, heat and weather resisting paint results.

The binding oil is largely protected by the *Flake Graphite* pigment. The proposition is not a theoretical one but has been demonstrated as true on thousands of stacks in different climes. A stack painted with Dixon's Black is free of blisters, discolorations and rust. Dixon's Black covers well and looks well during its long life.



# Graphite

VOL. VI.

OCTOBER, 1904.

No. 11.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

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## TALK COUNTS.

The *Stoves and Hardware Reporter* says that the old saying that "money talks" is all right, but that after all, cheerful talk talks quite as much to the point, and so far as general prosperity is concerned, cheerful talk talks much better than money talks.

Business men can in a large degree control the volume of trade by the way in which they talk. A great deal depends on public confidence and that is not secured by grunts, groans and dire prophecies. If, however, all of the business men talk in a hopeful and optimistic way, others probably will follow. We all know there is nothing that succeeds like success and that cheerfulness is half the battle. No one ever saw a new and enterprising newspaper that was not preaching from the

start of the great success it was meeting. It is well known that young doctors just starting in business, and not permitted by the code to advertise, usually wear out two or three horses, and have themselves called out of church during the sermon, in order to give the impression that they are having all the business they can handle.

If business men find times somewhat dull when the first thing to do is to eliminate that graveyard sigh, and the almshouse line of talk. No sane man would ever think of telling all his neighbors that his wife had cold feet, or that his mother-in-law was in the habit of reading certain lectures to him. Why is it then that just as soon as trade drops off a little, that business men go about telling you that business is going to the bow-wows, and that "is me to the poorhouse" in a few short moons. People in general do not like to disappoint a sad man, and if you persist in telling folks that you have embarked for that institution of charity, no one will be unkind enough to pull you off the train.

Suppose trade is dull; be thankful that it is not worse. Then wipe your spectacles and go hunting around for some method of injecting a little life into things, and do it with a smile. If you must look sour once in a while, go down in the cellar behind the nail kegs, and have it out with yourself; then come up with a smile that don't come off until you feel compelled to retire and have another round.

A certain man had a wife with an angel disposition; if he stepped on her train and ripped it from A to Z, it was "never mind, dear, I can fix it." One day after some such sort of a mishap he followed her up, unknown to her, and found her biting the bed post. If you haven't any bed posts to vent your temper and pessimistic feelings on, and no cellar to go down to, find for pity's sake some way of getting rid of your graveyard face, without inflicting it on the public.

A recent magazine writer told of an old man who lay on his back for fifteen years, yet no one saw him when he was not bubbling over with gratitude. He thanked the Lord for his former health and strength; for his fortunes, and that his misfortunes were not greater; for the sunshine of the hottest day, and the rain of the most protracted storm; for the pain that chastened his spirit; and when he was dying, he thanked the Lord that it was during a spell of good weather, so that they would have a pleasant day for the funeral.

Look pleasant, be thankful and hustle.

## COMPLIMENTS FROM THE PRUDENTIAL LIFE INSURANCE COMPANY.

The Prudential Insurance Company of America.

HOME OFFICE, NEWARK, N. J.,

August 18, 1904.

Dear Brother:—I want to compliment the Dixon Company on the efficiency of their Eterno; it is without question the best indelible pencil on the market. Our agents use this kind of pencil exclusively, and say the lead is so superior to other makes that it will not wear out.

I have one in my possession which has been used constantly for five months and still in use. How can you make money when your pencils will not wear out?

Yours very truly,

WM. H. MATTOCKS,

Asst. Supt.,

Hoboken.

In overhauling engines, pumps and machines of all sorts, have a can of Dixon's Graphite Pipe Joint Compound close at hand. Daub a little on the shanks of bolts, clearance-spaces of cylinders, inside glands, stuffing boxes and nuts, on gaskets and wherever metal is fastened against metal and rust could creep in to do damage.

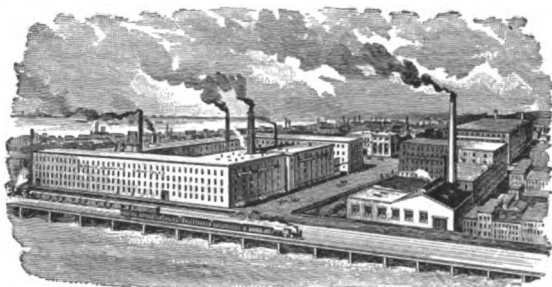
Dixon's graphite publications are sent free of charge to all who are interested in the subject of graphite.



ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

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GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., October, 1904.

### IS IRON OXIDE OR GRAPHITE PAINT POISONOUS OR INJURIOUS IN A SANITARY WAY?

W. B. D., St. Mary's Ferry, N. B., asks:

What chemical or mineral poison is there in iron or brown graphite roofing paint that would poison an animal, say a cow, for instance, on drinking the rain water coming from a roof that had been painted the day before, the water merely running over the new paint?

Answer: There is absolutely nothing injurious in oxide of iron or graphite paint that would affect water running over it to such an extent as to cause serious complications to the stomachs of animals. Such water might produce nausea, if partaken of by a delicately-inclined human being, but even in such case there would be no ill after-effects. Even if there were some soluble matters, such as iron sulphate, present in the pigment and some oxide of lead in the driers, these would be so well enveloped in the oil that they would not be dissolved by the rain water. The paints you mention are the most harmless in the whole line of roof paints.—*The Painters' Magazine*.

The above reminds us that some years ago a man wrote us that his cow had been poisoned by drinking water caught from a roof that had been painted with Dixon's Silica-Graphite Paint, and he thought that \$75 was what the Dixon Company should send him for the loss of his cow.

We wrote the man telling him frankly the nature of Dixon's Silica-Graphite Paint and suggested that before he pressed the charge for the \$75, that he ask the nearest

druggist or doctor the nature of silica-graphite and its effect upon a cow or animal life.

The man evidently was a fair-minded man, for a few days afterward, we received a letter from him advising us that the paint was all right; that he believed it would be as good for his cow as it was for his roof and that the death of his cow, he found, had been caused by eating wild turnips or some poisonous vegetable picked up somewhere.

THE Joseph Dixon Crucible Company of Jersey City, N. J., seems to have an inexhaustible supply of attractive literature which it is constantly pouring on to our editor's desk. If this goes on we shall have to hire extra help for the purpose of describing the Dixon products alone. We have recently received sample copy of "Graphite," the company's monthly publication. This is full of the usual interesting matter. So much so that we forgot the other literature while reading "Repairing and Adjusting Machinery," by W. H. Wakeman. This is the most interesting article in this month's issue. Being thus belated, we turned the rest of the matter over for review to our poetical editor and the rest of our notice is contained in the following lines. We shall certainly have to fire him if he makes any more breaks like this:

A link in the chain  
Of Dixonite gain  
Has now come to light  
In "Bike" chain graphite.  
It catches no dust,  
Eliminates rust,  
And saves much of the strain  
That gives a wheel pain.  
Be wise in your day,  
And write straight away,  
Mentioning *Brick*, of course.—*Brick*.

### DIXON'S COLORED CRAYONS.

136 Bank Street, BATAVIA, N. Y.

Joseph Dixon Crucible Co.,  
Jersey City, N. J.

Dear Sirs:—Received the boxes of Colored Crayons you kindly sent this A. M.

Have already tried them and find they work beautifully. The crayons are certainly the best I have ever seen, and it will be a pleasure to recommend them to all I know who are interested in color work.

Thanking you for your prompt reply, and the generous supply of crayons sent.

Yours truly,

FLORENCE J. QUIRK,

Supervisor of Drawing.

THERE ARE as many good reasons why every engineer and pipe-fitter should use Dixon's Graphite Pipe Joint Compound, as there are good uses for it.

This means that every bolt, nut, flange, pipe joint and faced connection, where tightness is wanted, with the possibility of some day unscrewing or separating, should be coated with Dixon's Pipe Joint Compound.



## OIL PUMPS FOR STEAM ENGINES.

By W. H. WAKEMAN.

Much more attention is given to the lubrication of steam engine valves and pistons at the present time than was deemed necessary a quarter of a century ago, consequently almost every engine in use is fitted with a lubricator that feeds oil regularly into the steam pipe. This saturates the steam with oil, therefore every part touched by steam is lubricated.

Nearly all of these lubricators are designed so that the oil passes upward through water in a sight feed glass, so that the engineer can tell at a glance just how much oil is feeding.

This assumes that the glass is kept clean, but in some cases we find the glass so covered with burnt oil and dust from the air, that it is difficult to tell whether any oil is passing or not. There is no small matter that gives an engine room such a slovenly appearance as this, and as a remedy can be easily applied, every engineer who has the least regard for his reputation should keep his sight feed glass in good order.

Sometimes the drops of oil persist in touching the inner surface of the glass, leaving it spotted with them, although the engineer may clean them off frequently. In such a case a small piece of waste on a stick may be used as a swab, after which the glass may be filled with glycerine. This causes the oil to be divided into much smaller drops than formerly, therefore more of them should pass each minute in order to get the same amount into the steam pipe.

When glycerine is used care should be taken to refill the lubricator before all of the oil is used. If this is not attended to, water follows the oil through the nozzle, and as it ascends, the glycerine is floated out by it and is thus quickly disposed of.

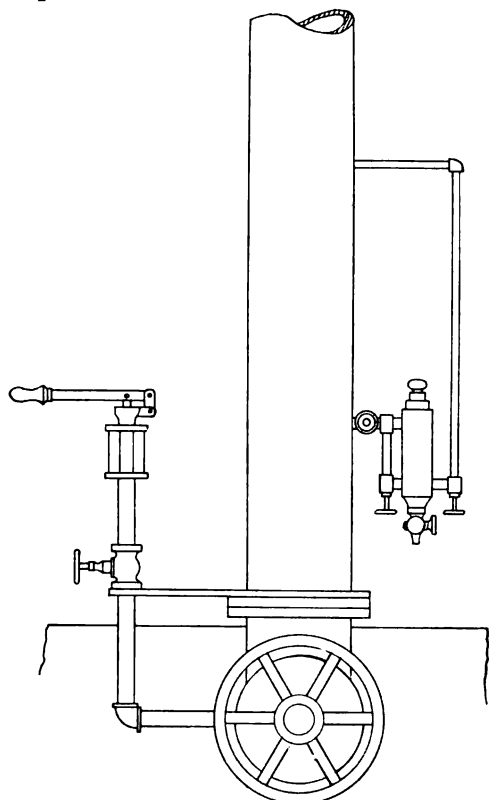


FIGURE 1.

If a lubricator is fitted with a gage glass to indicate the amount of oil in the body of cup, it is not difficult to avoid letting all of the oil feed out.

Although these lubricators are seldom out of order (if properly taken care of), there is always a chance for one of them to be disabled when it is badly wanted, therefore it is well to have an oil pump ready for instant use as an auxiliary feeder, for it gives an engineer a bad name if he can not keep his engine in operation as required by his employer.

Fig. 1 illustrates the location of the lubricator and oil pump on one of the engines in my plant, which gives satisfaction. The oil pump is not only a safeguard by way of a reserve oiler in case the lubricator fails, but sometimes the oil is out when it is not convenient to refill it. Then it is very convenient to give the oil pump two or three strokes, to supply oil enough for a few minutes, also to keep it in working order.

If the engine is to be shut down for several days, or even over Sunday, it is a good idea to give it an extra dose of oil during the last minute that it runs, as it is much less liable to rust while standing.

Oil agents do not always admit this to be true, as they sometimes claim that if a good oil is used it will keep the surface well coated at all times, but while I use the best oil to be found, regardless of price, I believe it to be a good plan to put in an extra quantity as above mentioned, as experiments have fully proved the benefit of so doing.

The throttle valve shown in Fig. 1 is designed so that pressure is always on top of the disk. The oil pump discharges into the bonnet of valve, therefore the entire inner surface is well lubricated. This may not be actually necessary while the valve is wide open, but when the disk is barely raised from its seat, allowing steam to rush through a small opening, it should be saturated with oil to prevent the cutting action which would otherwise take place.

Both steam and exhaust valves of this engine can be opened by a small lever, therefore it is convenient to blow steam through them for about 15 minutes before starting the engine, in order to thoroughly warm the cylinder, preventing water from filling the clearance during the first few revolutions made. It is especially necessary to use oil at this time. It will be a matter of interest to note that although this valve has been in use for ten years, it is still absolutely tight when closed by the use of one finger on the wheel.

Another advantage gained by the location of an oil pump as shown, is that when it is desired to use graphite to prevent groaning of piston or valves, and to assist in decreasing friction on general principles, by giving the interior parts a glassy surface, it may be mixed with cylinder oil and pumped in at pleasure.

A small amount of graphite can be fed through an ordinary sight feed lubricator, so that engineers who are not provided with an oil pump need not feel discouraged, but the oil pump is better.

A short time ago the lubricator on a high speed engine in my plant was ruptured while in ordinary service and had to be taken off at once. An oil pump was attached to the steam pipe as shown in Fig. 2 for use while

securing another lubricator, which the manufacturers promptly furnished free of cost, on being duly notified.

This oil pump worked perfectly for a time, but if oil was allowed to stand in it for several hours, it would boil, making it impossible to pump it into the cylinder.

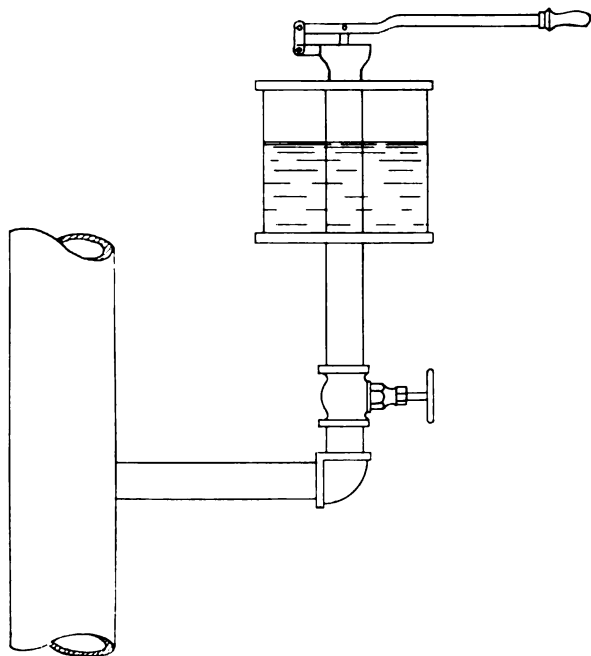


FIGURE 2.

To overcome this difficulty two ells and two nipples were added, as shown in Fig. 3. The result is that water stands in the small pipe between the steam pipe and the pump, at all times, therefore oil in the glass body does not boil even if left there for a week, but the appliance is always ready for use.

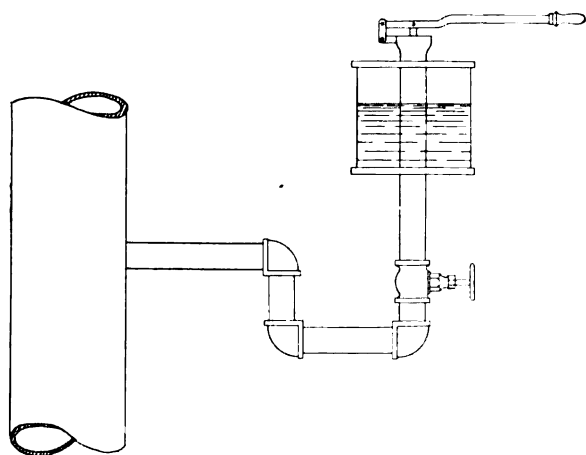


FIGURE 3.

After the regular lubricator was replaced, this oil pump was connected to the steam pipe of a duplex pump used to take hot water from a receiver. A good lubricator is located near the pump, but this oil pump is placed between the boilers and the receiver, therefore it can be used to force oil through the automatic throttle valve used to control the speed of pump in the usual way. A small quantity of oil twice per week keeps this valve in good order, but otherwise it sticks and fails to control the speed of pump. The lubricator was formerly connected at this

point, thus sending all oil used in the duplex pump cylinder through the automatic valve, but some of it leaked into the receiver where it was not wanted, therefore the lubricator was put near the duplex pump, so that none of the oil can find its way into the boilers.

Oil standing in the glass body of pump shown in Fig. 1 does not boil as it did in the case of Fig. 2, making it impossible to use it, although there is no trap provided to retain water for a safeguard, as illustrated in Fig. 3. The only possible explanation of the difference in results secured is, that in the former case the pipe is longer, yet the vertical piece in Fig. 1 is only 8 inches long.

This well illustrates the difficulty of giving directions that cannot be followed by others for the improvement of their plants, as a seemingly unimportant point makes all the difference between success and failure, and if an experiment described by one engineer, and tried by another, does not give perfect results, the blame is nearly always charged to the former, although the real cause of failure may, and frequently does, rest with the latter.

It is well to note in this connection that when oil standing in a reserve pump becomes overheated and begins to boil, it appears exactly as if an iron chip or dirt of some kind had lodged under the small check valve provided, thus holding it open and allowing steam to blow back into the oil. It is useless to take the appliance apart and clean the valve (as a general rule), although it is of course possible for something to lodge at this point and cause trouble. Heat seems to warp the valve and render it useless, and the only practical way to dispose of the trouble is to provide a trap to fill with water as described.

Water is one of the most wonderful articles in the world, and would be more generally so considered were it less common. Note for illustration its capacity for absorbing heat, which makes it useful in this case. Suppose that a pound of it at a temperature of 60 degrees Fah. is put into the trap mentioned. Under 100 pounds steam pressure the temperature must be raised to about 338 degrees in order to reach the boiling point. This means that about  $338 - 60 = 278$  heat units must be added.

Before it will actually boil, 875 heat units in the form of latent heat must be added, making a total of 1,153 heat units. This explains its failure to boil while standing in the trap, made of one-half inch pipe in this particular case.

Of course, a pound of water would not be used, and this amount is mentioned for convenience in illustrating. No harm is done by it as the heat required is in direct proportion to the weight of water used.

If the latent heat was not required it would soon boil, making it a nuisance instead of an advantage, but the fact that so much heat is required gives a chance for some of it to become scattered by radiation, consequently enough to make it boil can never accumulate under these conditions.

Pueblo, Colo., Oct. 22, 1903.

In my judgment your 'Eterno' copying pencil No. 2050 fills all the requirements of a good copying pencil.  
J. J. Lambert.

## GRAPHITE REMINISCENCES.

Boilers and Smokestacks.

By LEWIS F. LYNE.

We are just beginning to understand some of the uses to which graphite may be applied in the mechanical arts. Take for example the case of a vertical boiler where the bottoms of the shell and furnace are joined by an "Ogee," as shown in Fig. 1, having one calking edge and one row

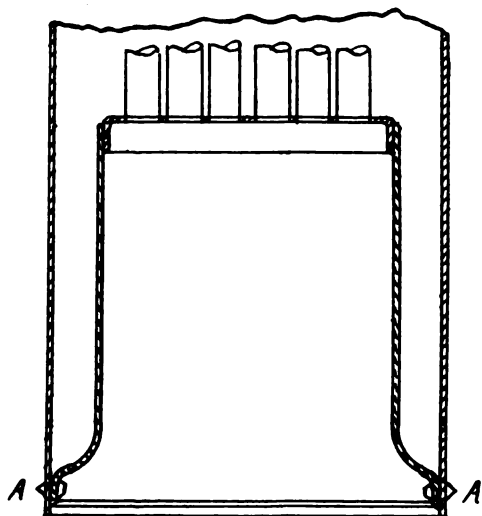


Fig 1.

of rivets at A A. This form of construction was adopted to avoid the expense of a mud-ring which requires drilling for each individual rivet, as shown at B B in Fig. 2, as well

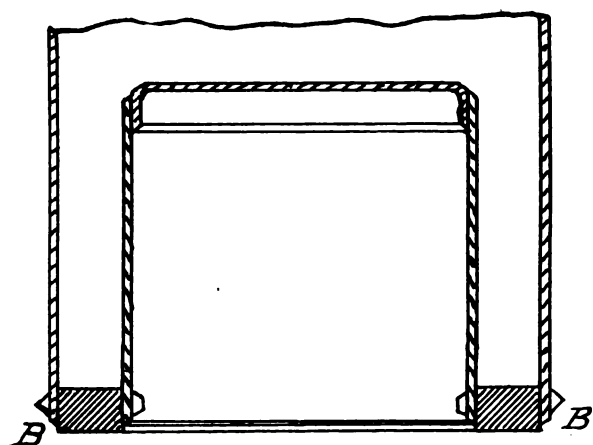


Fig 2.

as the expense of forging and welding.

Another very serious objection to the mud-ring was, that with certain waters containing mineral salts a galvanic action called pitting or grooving started at the upper edge of the mud-ring on the inside of the shell at C, Fig. 3. This grooving has been known to cut clear through the sheets and so weaken them that explosions have often occurred as a direct result. It will be noticed in Fig. 3 that there are two calking edges D D, so that in time the water would eat its way down and cut through the calking edges, thereby causing leaks. In the design shown in Fig. 1, the action of mineral salts in the water causes excessive pitting upon the interior F of the "Ogee" shown in Fig. 4. The

calking edge E is destroyed, and in time the sheets will cut through just above the rivets. Some water legs on locomotives last from three to three and a half years only.

It is a very easy matter to prevent this corrosive action, and it can be done by swabbing the inside of the boiler with Dixon's Silica Graphite Paint, being careful to flow it in freely, so as to fill all the recesses and cracks between the sheets and mud-ring or "Ogee," where the sheets join one another. Where this paint covers the metal surfaces there can be positively no galvanic action.

Some people would say that this is too much trouble, but it takes only a few minutes and a little "horse sense" to thoroughly paint the sheets below the grate-bars and all around the bottom calking edges and mud-ring with two coats, or still better three, by which the metal is protected indefinitely.

A boiler should never rest upon brick work, as the moisture will take up sulphur from the coal gases in the atmosphere and in a short time destroy the iron and steel work. Notice the unprotected iron and steel work in the vicinity

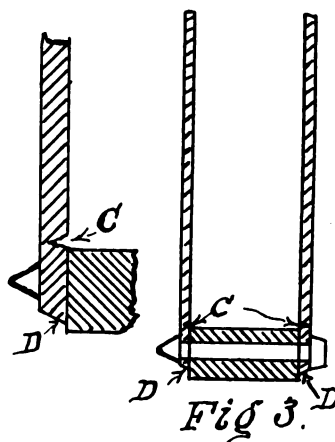


Fig 3.

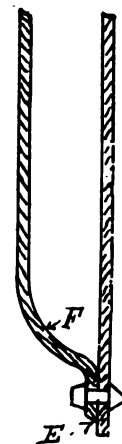


Fig 4.

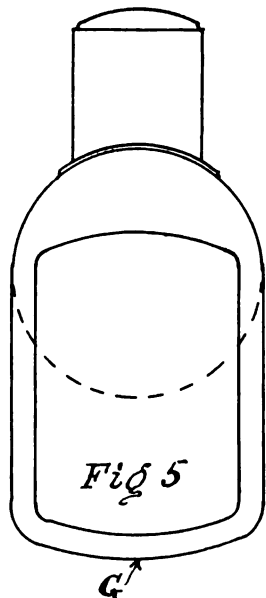
of large cities or in manufacturing towns, and it will be found badly pitted and corroded. Boilers set in brick work should always be painted with Dixon's Silica Graphite Paint, which will successfully protect the iron from all corrosion and pitting.

I was once called to inspect a portable boiler having a water bottom like that shown in Fig. 5. This rested upon a bed of bricks and mortar, and corrosive action had set in and destroyed the entire bottom of shell at G, so that the boiler had been condemned. This boiler should have been painted both inside and outside at the bottom, which would have preserved it for many years.

It has long been my custom to paint the inside as well as the outside of iron and steel chimneys. Think a moment and consider this question. Does not a stove pipe waste away almost wholly on the inside, although great care is taken to protect the outside by oil and polish?

After erecting two iron chimneys at a certain plant, I had a workman give the inside of each one a coat of Silica Graphite Paint. When this coat was dry, the workman went from top to bottom and puttied all the chinks and recesses, using red lead and copal varnish with a liberal mixture of graphite to protect the metal.

A few years since, I had erected, in the vicinity of New-ark, a steel boiler and smoke pipe, with the injunction that the chimney be given at least two coats of Silica Graphite Paint. This was not followed, and in nine months the bottom course of this chimney was eaten through and the tubes in the boiler were pitted so that about half of them had to be renewed. This was in a greenhouse, and someone had told the owner that the best way to protect the boiler was to fill it up to the top with water and let it



stand all summer in that condition. Distilled water does love iron and steel, particularly the latter, and just goes for it in a most affectionate way and manner. Why pure water does this is a chemical paradox.

The boiler should have been emptied and the blow-off cock closed, after which at least two gallons of crude petroleum should have been introduced and the shell filled to the top with water. The crude petroleum, floating on the surface of the water would have reached all parts of the shell and tubes, and then the boiler should have been drained and the bottom mopped dry.

The vaseline in the crude petroleum successfully protects the surfaces of the shell and the tubes from the action of the oxygen in the air and thus saves the boiler from deterioration. All the bolts and nuts upon the pipe flanges, as well as those upon the handhole and manhole plates, should be protected by coating them with flake graphite mixed with engine oil. Then they will come off easily if desired.

#### AUTUMNAL TINTS.

Now that the shortening days and lengthening nights are gradually inducing that wintry sleep of vegetation prior to which a large percentage of trees and shrubs and lesser growths throw off entirely their leafy garb, we find these unobtrusive green leaves rivaling the brightest blossoms of the summer in the brilliant tints they assume. Curiously enough, too, in most cases the alteration of the sap, as its vital flow is first slowly checked and then stopped altogether, leads to the assumption of a gamut of tints embracing the brightest complementary colors of the normal hue of green. In one and the same leaf we start

with the pale green of the opening buds in spring, the ripe, dark viridity of the late summer, and now, at the first keen frost, it first turns pale and sallow, and then blushes vividly, changing into glowing scarlet as it falls fluttering to the ground. Here, in the succeeding stages of decay, the scarlet deepens and sobers down into warm russets and browns prior to merging into the dusky tints of Mother Earth herself. The subtle changes which lead to this wonderful display of color are extremely interesting when considered in relation to the laws of color generally. Every tint, as is well known, has its own particular number of vibrations of the rays of light which produce it, precisely as every tone in sound or music has its special number of aerial vibrations, which cannot be altered without altering the pitch. Hence, in the leaf, during its period of vitality, it is endowed with a capacity for absorbing all the tints but the green, which it rejects and reflects, and by virtue of which we term it of that color. So soon, however, as its vitality declines a change sets in, and as it wanes the light is gradually decomposed in a different degree, and correspondingly divers hues are reflected in the process. If we observe the colors of the rainbow or spectrum, we shall invariably find a certain order maintained; beginning with violet, the tints gradually merge into indigo, and thence into blue and green. Then, starting from this completed half we find precisely the same successional order as we observe in decaying leaves, viz., the pale greens, yellows, orange, and reds, which render our autumnal landscapes so brilliant as to defy the palette of the painter to reproduce them. This richness of coloring is a feature which merits full recognition in the choice of trees and climbers especially. A wall covered with Ampelopsis Veitchi, for instance, is intensely beautiful for several weeks before the foliage actually drops, the varying degrees of exposure to sun or frost bringing out the colors irregularly, and thus adding the additional charm of contrast, since all the hues from green to scarlet will be presented in a single coup d'œil.—*The Gardener's Magazine*.

#### COLLEGE COLORS ON PENCILS.

Sometime during last winter the Dixon Company originated the idea of making a series of college pencils. The pencils for each college were to be made in alternate stripes, if there was more than one color, to designate the college colors. For instance, the Cornell pencil was made with red and white stripes; the Princeton, with orange and black; the Harvard, a deep rich crimson; the Purdue University, old gold and black, etc., etc.

This idea was taken up by a great many of the colleges and universities, and, up to date, the Dixon Company have already made over thirty different combinations of color for these different pencils.

Every college has its distinctive emblems, mottos, games, races and yells, so why not a college pencil? They make very attractive and beautiful pencils and cost very little, if any, more than the regular trade goods.

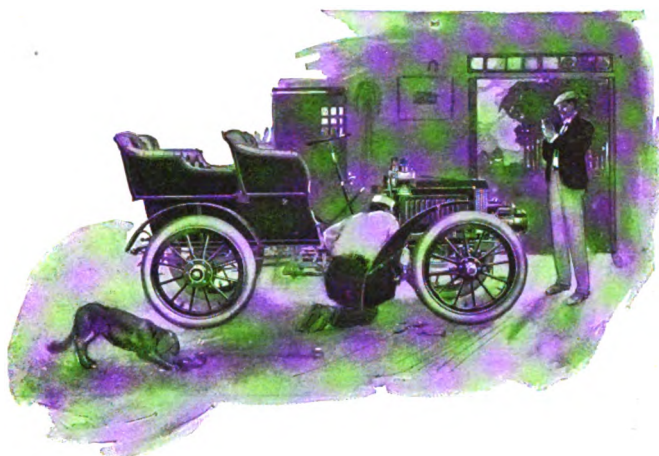
The business colleges have also taken up this idea, and instead of having the pencils printed in colors, they have them printed with their names and addresses, to be used for an advertisement.



# OUR LONDON PAGE

All Communications, Inquiries, Etc., relating to this Page should be addressed to Joseph Dixon Crucible Co. (Geo. W. Wollaston, Mgr.), 26 Victoria St., S. W., London.

## MOTOR CAR LUBRICATION.



The automobile of various types presents no new problem so far as lubrication is concerned. Every form of mechanical movement in it is known and has been previously used in other machinery.

The supremacy attained by Dixon's Graphite in other branches of mechanics holds true with respect to the automobile. Dixon's Pure Flake Graphite is prepared in various ways to make it suitable for the running and wearing parts of all the different types.

## BEARINGS.

A well-known authority, member of various Committees, and one who has thoroughly experimented with graphite lubrication, writes us as follows:—

"I am convinced that for all motor car work where the engine and gear cannot be completely enclosed, Dixon's Graphite Cup Grease forced into the bearing by pressure so that it forces out and extrudes the old grease and any dirt which may have found its way to the inside of the bearings, is the best and most modern method of lubrication, and I am advising all my friends at the Automobile Club to adopt it."

## GEARS.

Between gears that are at all loose Dixon's Motor Gear Grease forms a cushion which quiets the noise, besides which it lubricates perfectly and prevents wear. For new gears which fit tight, it is perhaps a trifle too coarse, and will not sufficiently squeeze out. We therefore recommend Dixon's W. P. Gear Grease, which is thoroughly waterproof, extremely sticky, has great body, and is not corrosive under any circumstances.

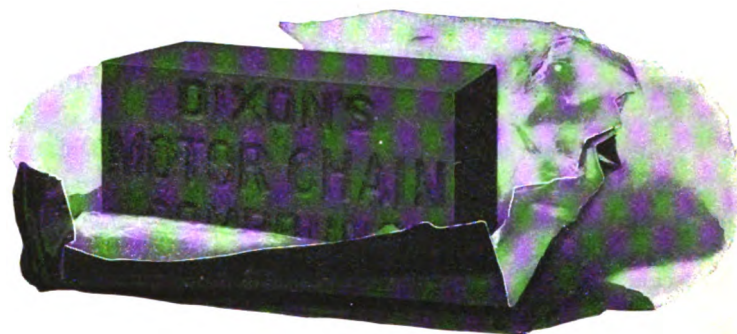
We also recommend our Graphitoleo, the same lubricant as for the chains, on the smaller gears of automobiles. Being prepared from the choicest Graphite, it is a fine lubricant for the ball bearings of axles and for all light bearing parts. A handy and perfect *general* lubricant for all own-

ers of motor cars, as it can also be used, in emergency cases on the road, for the cylinders; and is put up in very handy collapsible tubes.

## CHAINS.

Dixon's No. 687 Lubricant on driving chains makes smooth and easy running and has great preservative qualities. Not only lubricates the chains and sprockets, but thoroughly lubricates the pivots or pins holding the links of the chain.

We also prepare a special Motor Chain Compound, which is a mixture of Dixon's Graphite with neutral animal and mineral lubricants, and is molded into hard, oblong cakes. These are melted down and the chain thoroughly immersed therein. This treatment provides a bushing of the Graphite Compound, hard and durable, about every pivot or joint, and the chain is thoroughly lubricated and protected.



The chain of a motor vehicle so treated ran for three months on the South African Veldt in the late War, with the one coating.

## GENERAL REMARKS.

Our introduction of the above preparations to the British automobile industry has met with encouraging success, and our views are corroborated in most cases that no other lubricants on the market equal them for their respective purposes. There are points and advantages about graphite lubrication which ordinary oils and greases cannot touch.

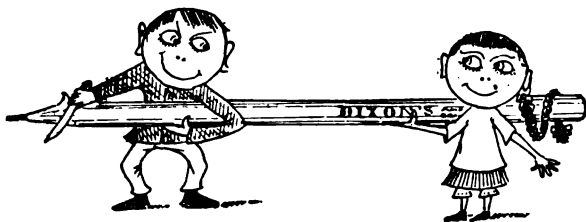
In a few cases (one is bound to run across conservative people of this sort) our overtures have been met with the retort: "Present lubrication quite satisfactory, thanks!" We have pointed out, however, that even when our own greases cannot be adopted, the addition of Dixon's Pure Flake Graphite in the proportion of 10% or 15% by weight to ordinary oils and greases vastly increases their lubricating efficiency; and our sales of the flake graphite in its dry form have been quite extensive.

In conclusion, we need only mention that the advantages of our No. 635 Graphite for cylinder lubrication, Graphite Compound for jointing, Belt Dressing for the belts of motor cycles, &c., are fully described in pamphlets which are gladly posted to all who are interested.

### WHAT THE SUPERINTENDENT SAID.

At a recent convention of school superintendents, a representative of the Dixon Company was asked by quite a prominent man in the educational world: "Why do you spend so much time and money attending these conventions, and telling the story of the Dixon Pencil? There isn't any *other* pencil, is there? At least, if there is, I have never known of it in school work."

This is simply one of the proofs that the name of Dixon is slowly but surely being impressed on the minds of all connected with school matters, so that when the purchasing agent goes to the superintendent, and asks him what pencils to order, the superintendent will naturally, and without hesitation, say: "Why, Dixon's of course."



### COLORS FROM FAIRY LAND.

Early in the summer the Dixon Company issued a little color booklet, containing only six pages, but each page illustrated in color from drawings made with Dixon's Solid Crayons. A little verse was attached to each picture, which told in a very interesting way, "How the Different Colors were brought to Earth by the Fairies for the use of Mortals." The verses are given herewith, but to fully enjoy them, you should have the little booklet so that you can see the illustrations which speak so eloquently to the eye of the work that can be accomplished with the Dixon Crayons.

The Dixon Company will send copies of these little books to any and all who wish them, as the beauty and excellence of the drawings appeal as well to the older ones as to the younger.

The verses follow:

In the ages gone when the world was new,  
The flowers were all of a single hue,  
And even the poppies and blushing rose  
Were wan as the pallid lily's snows;  
The fairies painted their petals fair  
With DIXON'S CRAYONS in colors rare.

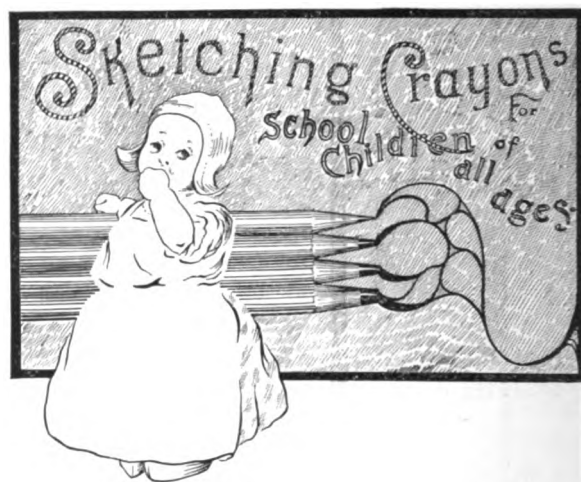
Then out of the depths of the ocean's blue  
Arose a cry from the mermaids, too,  
For DIXON'S CRAYONS to paint the shells,  
The fish and flowers of the ocean dells;  
And all the colors of sky and lea  
They copied — down in the deep blue sea.

The jealous witches their cauldrons filled  
And fairy tints from the flowers distilled,  
Then DIXON'S CRAYONS they bore on high  
And the rain-bow traced in the azure sky.  
They streaked the West with the sunset's show  
And stained the East with the dawning's glow.

And when the birds with a jealous eye  
The colors saw in the glowing sky,  
They begged a witch for the magic tints  
That now on the tail of the peacock glints;  
And the sparrows brown, the flamingoes gave,  
With DIXON'S CRAYONS their plumage brave.

The crafty gnomes in their earthy caves,  
The colors stole from the dancing waves,  
To give the jewels their gorgeous hues,  
And paint the gems that mortals use;  
And the golden streak in the good brown earth  
By DIXON'S CRAYONS was given birth.

And so the colors of fairy land  
Were brought to earth by the spirit band,  
And now the children of mortals use  
The very essence of fairy hues,  
And school is richer than play in fun,  
For DIXON'S CRAYONS have made them one.



### MIGHT ASK HIM.

Governor Shaw of Iowa, the recently appointed Secretary of the Treasury, tells this story of a personal experience while trying a case in an Iowa court. A boy about fourteen years old had been put on the stand and the opposing counsel was examining him. After the usual preliminary questions as to the witness' age, residence and the like, he then proceeded:

"Have you any occupation?"

"No."

"Don't you do any work of any kind?"

"No."

"Just loaf around home?"

"That's about all."

"What does your father do?"

"Nothin' much."

"Doesn't he do anything to support the family?"

"He does odd jobs once in a while when he can get them."

"As a matter of fact, isn't your father a pretty worthless fellow, a dead beat and a loafer?"

"I don't know, sir; you'd better ask him. He's sitting over there on the jury."—*New York Times*.

Dixon's graphite publications sent upon request.

# Graphite

VOL. VI.

NOVEMBER, 1904.

No. 12.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

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## THE STORY OF THE LEAD PENCIL.

For a number of years the Dixon Company have issued a little booklet called, "The History of a Lead Pencil." In this book is told the story of how the lead gets into the pencil, as well as can be described in print. It was intended at first mainly for commercial use, and for answering some of the many questions which are daily poured into the Dixon mail bags. It was gotten out to describe the pencils, their styles, shapes and sizes, and the erasers attached to them. It tells some facts about the works, and how they came to be where they are, and also tells how the leads are put into the cedar, and how the pencils are stamped and finished.

To further supplement this little book, the Company issued last years what is called the Dixon "Pencil Guide." This

"Guide" tells how to find pencils that are used by bank clerks, bookkeepers, carpenters, conductors, entry clerks, insurance agents, metal workers, railroad companies, salesmen, stenographers, telegraphers and a great many others. It tells why they should use these particular kinds of pencils, and it explains it so that it will be clear to every one. It tells why these pencils are made in different grades, and why a pencil of a certain grade, although it is excellent for one kind of work, is utterly useless for any other kind of work to which it is not adapted. This book is having a phenomenal success, and now to further supplement it, the Dixon Company are about to issue another booklet, called "Pencil Geography." This little book is patterned after the old style geography that was in vogue in the schools some forty or fifty years ago. It consists of a series of questions and answers, and in it is told in a few pages the story of the materials out of which the Dixon Pencils are made, where they come from, and how they are put together. This little book is illustrated with maps and original drawings made with the Dixon Pencils, and it will be one more added to the already large library of publications which the Dixon Company are continually issuing.

Any of these books will be sent, free of charge, to anyone who writes for them.

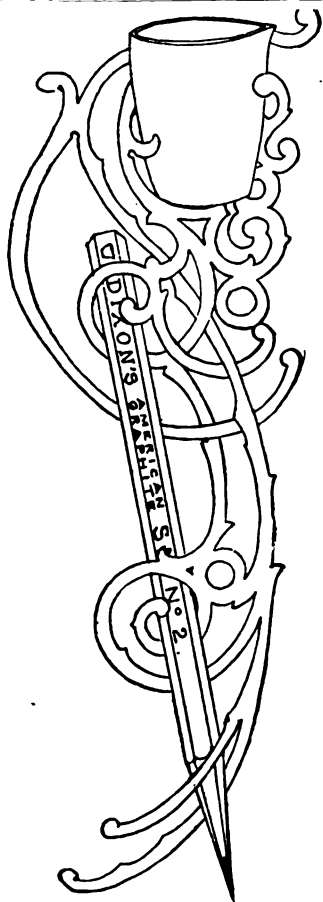
## A POOR CHOICE.

Once there was a member of a school board in a certain city, who, when the question of the purchase of pencils came up before the committee, made the statement that he thought the best pencil to buy was a poor pencil, because, he said, he often noticed that a poor pencil lasted as long as a good one. We immediately asked him if he hired his teachers on the same plan, that a poor one would last as long as a good one, or if he bought other things on the same general idea; he at last confessed that he did not, but said that he did not know as there was any difference in lead pencils, anyway.

We showed him that at the present time the Dixon Company were manufacturing over seven hundred different kinds, shapes, styles, colors and sizes of pencils, and he began to see that there was as much difference in lead pencils as there was in almost any article that was sold, and that in buying a lead pencil great care has to be shown in selecting the right pencil for the particular kind of work desired.

Dixon's graphite publications sent upon request.

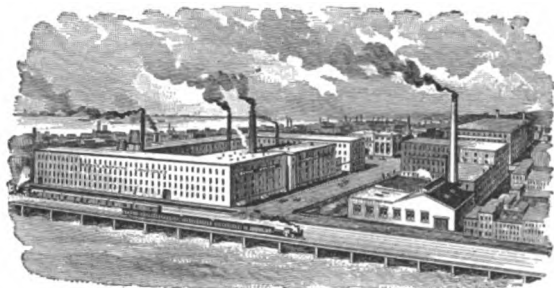
is a little larger book than "The History of a Lead Pencil," and is illustrated with drawings made with the Dixon pencils. This book is used to classify as far as possible under the heads of the different grades of pencils, just which pencils are best for certain kinds of work. The



ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

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GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
President. Vice Pres. and Treas. Secretary.

JERSEY CITY, N. J., November, 1904.

### "DIXON ON A VACATION."

The Adirondacks (tell it not to Russell Sage) are a noble place to spend a vacation. They are remote, the place is full of mountains and covered with lakes; the forest is dense and thick, and the solitude is perfect; the scenery magnificent, and hunting and fishing the best in the world.

We started with a beautiful surrey, two-seated, two fiery steeds and a driver, followed by a boy with a one-horse wagon, with the trunks. We left the Dixon graphite mines one morning and pointed West. Two days are spent at Brant Lake. We drove one day to Schroon Lake for dinner and another day to Warrensburg for dinner. Brant Lake, if not the most notable, is certainly the most beautiful lake in the Adirondacks; its surroundings of mountains, and noble waters twelve miles long, will sooner or later make its fortune. One day we drove from Long Lake to the camp of the late Wm. C. Whitney, on Little Tupper, and the way there was through interminable forests, eleven miles long. The Whitney camp was the only house in sight. It is perched on a hill on the lakeside and commanded the whole situation. The sensation of remoteness was perfectly lovely. The caretakers prepared us dinner and served it in the Whitney dining room. We were permitted the run of the house, which was fitted up in the most sumptuous and luxurious manner. We sat for hours on the piazza that afternoon, so far away from civilization that the scream of the locomotive could not possibly reach

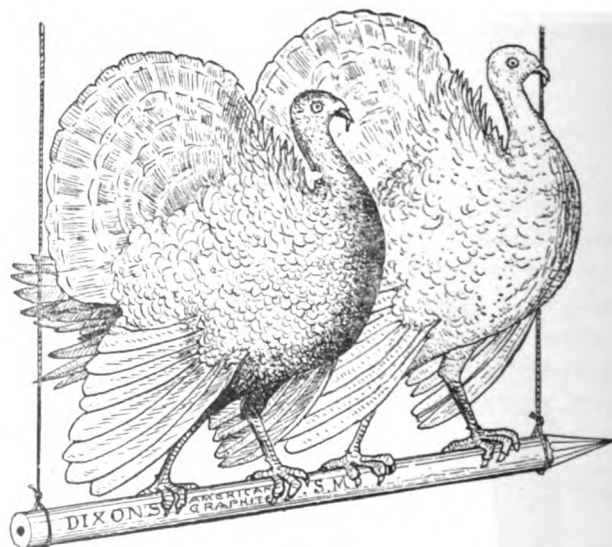
us. We lingered until late, and drove away in the evening, regretting that the happy hours flew so fast.

Another day found us at Aiden Lair, off the beaten track, secluded ten miles in the thick forest, no other house visible, no other house for miles around. Here Theodore Roosevelt stopped when he came down from Mount Marcy on getting news that President McKinley had died. Here horses were provided and the proprietor of this hotel drove Mr. Roosevelt to the nearest railway station. President Roosevelt's photograph, bearing his signature, acknowledging this courtesy, hangs in the parlor. The high mountains, interminable forests, solitude, blue sky seen through the trees, the breathless quiet, were all superlatively lovely.

Another day we spent at Blue Mountain and Racquette Lakes. Here we left the carriage and took to the boats, passing from Blue Mountain Lake to Racquette Lake over three streams of water, Eagle Lake, Utawana Lake and Marion River. Stopping at Casino Wharf of "The Antlers," at Racquette Lake, gave one the keenest pleasure. The elevation was 1,800 feet and the temperature 45 degrees, the day cloudless, and the lakeside studded with the camps of various New York millionaires, for instance, J. Pierpont Morgan, Andrew Carnegie, Timothy Woodruff, and others. The trip occupied some eleven days. The distance covered was 310 miles in the carriage. All along this line are studded good modest hotels with good rooms and good fare, and at a low price. The average temperature was between 40 and 50 degrees, and average elevation above the sea was from 1,800 to 2,100 feet.

—JOHN A. WALKER.

### A PUZZLE PICTURE.



Two products of the United States that are known the world over. One is specially dedicated to the month of November and the other to every month of the year. Both equally appreciated by every man, woman and child.

### OUR SHARE.

We very likely get our share of business, as a ship lately sailing for San Francisco, Seattle and Vancouver carried 603 packages of Dixon's Graphite products, a total altogether of 71,460 pounds.

Dixon's Flake Graphite saves time, oil and trouble.



## COMMITTEE REPORTS ON "WHAT IS THE BEST PREVENTIVE OF RUST ON STREET CARS."

Presented at the Annual Convention, Master Car Builders'  
Association, Saratoga Springs, N. Y., June 1904.

"Your committee feels that in consideration of the limited experience in the use of steel cars, and in view of the lack of definite results from experiments which have been made, and are being made, that its knowledge on this subject is not complete enough to allow of positive recommendations being made as to the best methods of treating steel cars in order to prevent the formation of rust on same. It would, however, submit to the association the following suggestions :

*First*—For new cars :

(a) The steel should be cleaned thoroughly of all rust and furnace scale before the car is assembled.

(b) All joints before assembling, should be thoroughly coated with coal tar.

(c) After car is assembled all grease should be thoroughly removed from the steel and same given a good coat of carbon or graphite paint on the outside and underneath, and the inside a heavy coat of crude petroleum, coal tar applied hot, or some similar substance.

(d) The outside to be given a second coat of graphite or carbon paint, as may be desired.

*Second*—For old cars :

(a) All the scale should be removed wherever it appears on the car by steel brushes and scrapers, and in the case of the inside of the car, by any of the above methods or by the use of pneumatic hammers or mauls.

(b) After all scale and rust have been removed the car should be thoroughly cleaned with steel scrapers or wire brushes and blown out with air, in order to present a clean surface for the paint.

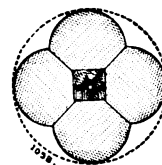
(c) The methods for paint recommended for new cars should be followed out in the case of old cars, after a clean surface is obtained.

*Third*—As some of the most prolific causes of deterioration of steel cars are the loading of same with hot billets, and use of mauls, bars, etc., on the outside to assist in the unloading of cars, and the allowing of cars loaded with soft coal to stand a long time with the load in same, it is recommended that steps be taken to do away with these practices as much as possible.

Your committee believes that if the above recommendations are followed out, and if care is taken to repaint the outside and underneath cars at least every eighteen months or two years, coating the inside with crude petroleum or coal tar about once a year, that excellent results will be obtained.

Your committee has refrained from going into the sand blast question in detail, as it is an open question as to whether the use of the sand blast is desirable for this class of work, on account of the hardships it imposes upon the men operating the same, and also on account of the expense attached to its use, due to the very rapid deterioration of the hose and nozzels."

## "PLUMBAGO LAID MANILA ROPE."



The C. W. Hunt Company, of West New Brighton, N. Y., manufacture a special rope made from the strongest quality of selected manila fibre, laid up with a tallow and plumbago lubricant, having the twist of the threads and of the strands carefully adjusted to the class of work to be done. The plumbago reduces the internal friction in bending over the pulleys, and the tallow makes the rope partially waterproof. It is said to be the only transmission rope that is not materially injured by exposure to the weather.

The C. W. Hunt Company make this rope for the transmission of power in rope driving and for general hoisting purposes. The coils are ordinarily 1,100 feet long, or they can be cut to any length desired. It is a four-strand rope, as shown by the cut herewith, and it is said to have been abundantly proven to have more durability in service than the ordinary three-strand. It is what is known as a four-strand rope with heart as shown in cut.

## IN "DARKEST AFRICA."

The captain of a steamer on the Upper Congo, who has for seven years past been engaged as foreign explorer, traveler and scientist, writing to a friend in the Dixon Company, has the following to say about Dixon's Graphite Products for the foreign trade :

"I believe that if your Company would make a push for the African trade they would find a great market here in cannibalistic Congo for many of their graphite products.

"We have some fifty to one hundred millions here who would be very glad to make use of Dixon's stove polish and paint for personal adornment, very much as the ladies in England and the United States use rose chalk and various other cosmetics. There would be a further advantage here 'In Darkest Africa,' because the native would use the materials from crown to toe, and the custom here demands that this personal adornment shall be made daily. Fashions rule here the same as in foreign countries.

"At the present time pulverized charcoal mixed with palm oil is largely used. This, however, finishes up the native in what painters call 'flat finish' and, if one of the belles here should start the fashion of a plumbago finish, it would certainly be all the rage. If your people would like my aid in this line, a surprise may be awaiting you."

## GRAPHITE FOR FISH LINES.

We have lately received an inquiry on graphite suitable for polishing fish lines; the idea being that a fish line when polished with graphite does not wet as easily, does not tangle as readily, and in fly fishing the line polished with graphite offers less resistance to the air and a much greater cast can be made.

Our correspondent claims that all these statements are based on experience, and that they are incontestible facts: We, however, give them publicity, and will leave it to our readers, who may be fishermen, to prove or disapprove.

## SOMETHING ABOUT CORLISS VALVES.

By W. H. WAKEMAN.

Engine builders who manufacture flat valves of any type, claim that they can be used longer without leaking steam than any other kind, and when repairs are required after a long term of service, a flat surface can be made perfectly true with the least labor possible.

On the other hand, those who manufacture engines with Corliss valves are sure that a circular surface is the best and most durable. They also claim that when repairs are at last required, this style can be made as good as new in short order.

The facts in the case are that there is very little difference between these two kinds, when all points are considered. If a flat valve could have its driving mechanism located on a line with the face of it, then there being no tendency to rock, the surface of both valve and seat would wear evenly and true, provided there were no hard or soft spots in the iron. As these two conditions have never yet been satisfactorily met, perfection along this line has not been achieved.

Corliss valve seats are bored out, hence they are supposed to be in the form of a true circle. The valves are then turned to form part of a circle the same diameter, less a suitable allowance to prevent undue friction caused by binding of the valves.

If it was possible to always make the exact allowance required, then fit the valve stems into bearings in which no lost motion is found when new, and none results from wear, also to make and maintain a perfect fit between valve and valve stem, then these valves would practically never need repairs. As these conditions are difficult or impossible to meet, slight wear must be expected.

Either kind of valves just mentioned should last for ten years without serious leakage, if properly made and cared for.

A flat valve can be taken out, planed off, scraped to a true surface by aid of a surface gauge, and thus made to accurately fit a similar surface on its seat. Of course it is possible for a good mechanic to file and scrape the seats until they are perfect.

It is quite possible to secure an equally good job on Corliss valves and seats, if sufficient care is bestowed upon them. The principal objection to this process, from the writer's point of view, is the way in which it is conducted.

When a set of Corliss valves need attention, the job should be placed in the hands of an expert, as its importance demands it. There is probably no better way than to send to the shop where that particular engine was built, or where others of a similar kind are in course of construction, and engage a machinist who has had charge of fitting the valves to their seats. By adopting this plan there is what is sometimes called "a fighting chance" to get a good job done.

The way in which it is frequently done may be described as follows: The castings required for the valves are ordered from the nearest foundry. Any available machinist is engaged to do the work, and he performs it to the best of his ability, but having had no experience in this particular kind of work, he either turns the valves on too

small a circle, making them leak when put into service, or gets them too large, so that it is almost impossible to move them with the ordinary valve gear.

The writer is well acquainted with specimens of both kinds, as above described, therefore this is no fancy sketch. Of course, the variations from correct sizes were very slight in both cases, but it was enough to cause trouble.

In the case where the valves moved hard I was asked to prescribe a remedy that would prevent the necessity of shutting down the plant. It was a rather difficult problem to solve, consequently work on it was begun without delay. A brass oil pump was purchased and connected into the ell

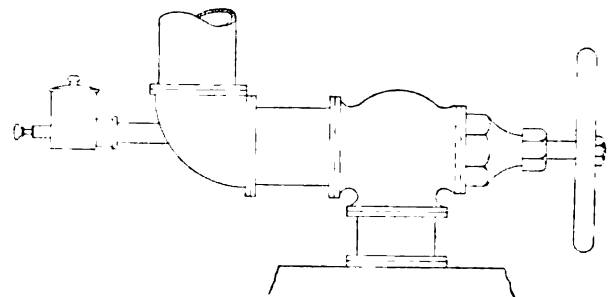


FIG. 1

above the throttle valve as shown in Fig. 1. In reality it was located on the side of ell towards the reader, but the principle involved is better illustrated by presenting it as shown.

In this plant the best of cylinder oil, without regard to price, is always used. After adding as much of Dixon's Flake Graphite as the oil would hold in suspension when well stirred, the mixture was pumped into the steam pipe and carried to the valves and piston. The dose was repeated once in about ten minutes during the first day, after which it was given less and less frequently, as the valves worked more and more easily.

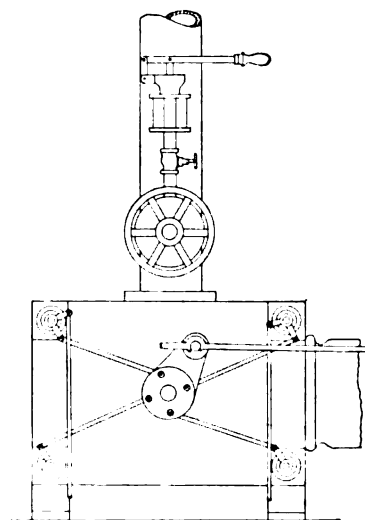


FIG. 2

When this treatment was begun, the valve rod vibrated badly on account of the heavy load on it, so that it was hardly safe to run the engine, but as the graphite was forced in between the rubbing parts, it produced glazed

surfaces that greatly reduced friction, therefore the vibration of rod was made less during the first day, and in a few more days it was almost entirely eliminated.

The result of this operation shows that the lubricating qualities of graphite are not changed by bringing it into contact with the high temperature of a steam chest under full boiler pressure.

While writing on this subject I wish to call attention to a small but significant matter. The brass oil pump shown in Fig. 1 is fitted with a screwed cover that must be removed every time the body of pump is refilled. Some engineers will take off a cover of this kind, fill the cup and replace the cover. Others remove the cover, and as they consider it too much trouble to replace it, said cover is left on the top of steam chest, or put on a convenient shelf. In course of time it is put somewhere else, and finally is lost. In the meantime, dust and dirt accumulates in the body of oil pump, the check valve becomes clogged with it, until finally the engineer condemns the oil pump and throws it into the scrap heap.

Has any reader discovered a steam engine from which the oil pump and oil cup covers have been removed and thrown away, that is otherwise kept neat and clean? Is such an engine ever kept in good repair and operated on a truly economical basis? As a rule these questions must receive a negative reply, and if there are exceptions to this rule we have not found them.

The oil pump shown in Fig. 1 is designed so that the engineer must force oil against steam pressure by main strength, as no leverage is employed, but the kind shown in Fig. 2 works easier on account of the lever provided. The body is made of glass, enabling the engineer to see at once how much oil there is ready for use.

The location of pump on the upper part of throttle valve makes a neat arrangement, and puts the pump where it is not in the way. It may not be quite as convenient for

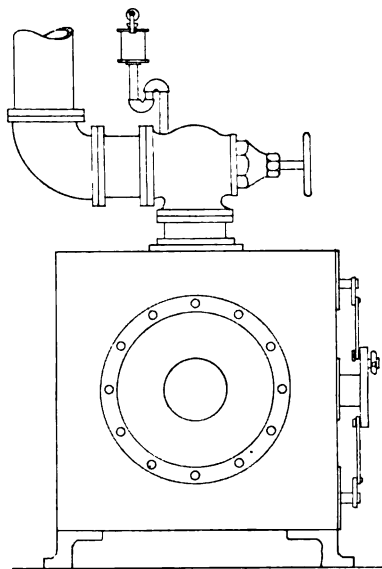


FIG. 3.

use, but inasmuch as it is required only occasionally, this should not be considered a serious objection. An engineer who attempts to have everything convenient without re-

gard to appearances, is sure to have an engine room littered with tin cans, oil barrels, bags of waste, various tools and scrap of all kinds.

More than one engineer who is not without faults otherwise, has kept a good position on account of scrupulous neatness, because appearances go a long ways toward making an engineer's reputation, and as a rule his just reputation is a true indication of his character, which is the real thing that counts for or against a man.

Fig. 3 is a side view of the throttle valve and oil pump illustrated in Fig. 2. It shows the arrangement of nipples and fittings used to provide a trap in which water collects and prevents the oil from being boiled by the heat of steam at high pressure.

Sometimes the end of Corliss valve stems, where they fit into bonnets on the side of steam chest, fail to receive the lubrication necessary for smooth operation, owing to tight fits at these points or from other defects.

Common brass oil cups are sometimes attached to the bonnets into which oil is poured, the cap screwed on and the outlet valve opened. This method of lubrication is a snare and a delusion, because the oil may go where it is wanted, and it may stay in the cup.

The method of supplying oil shown in Fig. 4 is much better, as the supply can be easily regulated, enabling the engineer to know just what he is doing in this matter, at all times.

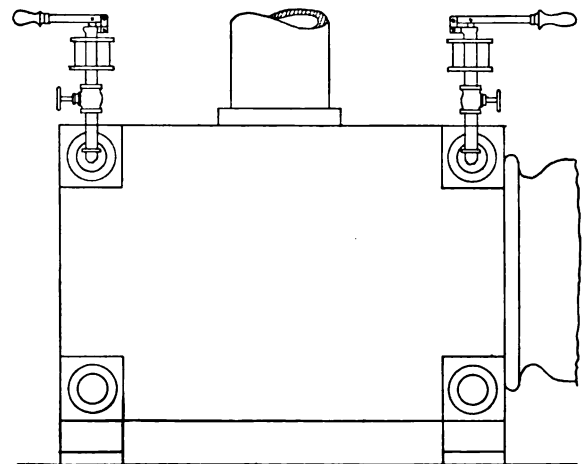


FIG. 4.

Readers sometimes glance at an illustration like Fig. 4 and lay it aside, believing that it means a considerable expense, but this idea is not always correct. These oil pumps made of brass, nickel-plated, and fitted with glass bodies ready for use, cost about three dollars each, which is certainly very reasonable. When we consider the value of good lubrication, especially under abnormal conditions, the expense of a set of these pumps is hardly worth mentioning.

The "shiny, unctuous veneer" that Dixon's Pure Flake Graphite puts upon cylinders, journals and bearings, well describes the effect of its use.

The graphite fills up the inequalities due to cutting or abrasion, making smooth, even surfaces.

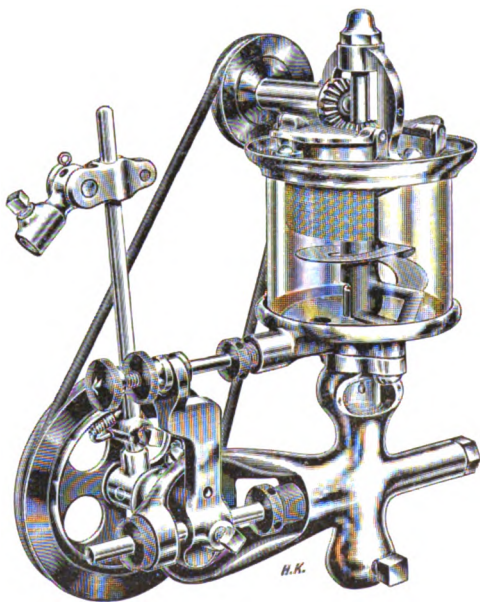
### A SUCCESSFUL GRAPHITE-AND-OIL CYLINDER LUBRICATOR.

Despite the thought which has been directed toward permanently suspending flake graphite in lubricating oil so that it may be fed not only to machine engine bearings, but likewise to engine cylinders through the familiar oil cups and sight feed lubricators generally provided, success has not crowned these efforts.

Flake graphite, no matter how finely divided, is a solid substance with greater specific gravity than even the heaviest cylinder oils, and it eventually settles to the bottom of the oil cup or reservoir if allowed to come to rest.

It need hardly be added that the thinner the oil the more quickly will this settling take place, but it should be remembered that oil drawn from the barrel is usually thicker than the same oil after it has become thoroughly warmed up in a hot engine room or near a steam pipe or cylinder.

We advise engineers not to attempt feeding even the finest-ground graphite through a sight feed cylinder lubricator of the ordinary displacement pattern, for there is nothing to prevent the settling of the graphite, resulting



either in a clogging of the oil passages or in most of the graphite remaining in the reservoir instead of finding its way to the parts to be lubricated.

The use of force-feed oil pumps is increasing every day, because of their absolute reliability in delivering the oil to the working parts. As long as a force pump runs the engineer is assured that the oil is reaching the different bearings and valves, whereas gravity lubricators often become clogged up and stop feeding with most annoying results. The lubricant simply has to go when pumped, and there is the additional advantage that the flow stops when the engine stops and starts again with the first revolution.

Force-feed oil pumps are no novelty on the market, but only a comparative few are so designed that they will successfully handle graphite and oil.

So many engineers desire to use Dixon's Flake Graphite along with their cylinder oil that recently several force-

feed lubricators with special agitating devices have come into the market. Among the most recent of these is the Manzel Agitating force-feed and sight-feed Oil Pump, manufactured by Manzel Brothers, 46-48 Broadway, Buffalo, N. Y. The construction and working of this pump will be evident to our readers from the accompanying illustration.

The lever at the left is actuated by connecting it with one of the reciprocating parts of the engine, and a ball clutch on the under side of the drive wheel converts these oscillations into rotary motion. A cam on the shaft operates the two plungers, the upper of which draws and measures the charge, forcing it through the sight feed glass, while the lower plunger delivers the lubricant to the steam pipe.

A round belt and bevel gears, as shown, turn a paddle and spiral agitator in the oil cup, keeping the graphite in constant suspension in the oil.

This lubricator will successfully handle even thick mixtures of Dixon's Flake Graphite and oil and pumps the coarser or finer flake equally well.

Those who desire to acquaint themselves with the theory of graphite lubrication and its practical benefits are invited to write for a copy of "Graphite as a Lubricant," ninth edition, revised and enlarged.

### A MESSAGE FROM INDIA.

An engineer in India writes us concerning Dixon's Ticonderoga Flake Graphite:

"Your letter and sample tins of graphite to hand, and am really thankful to you for the same, and for the address of the firm that I can get it from here, as it can be easily got, as I run into Calcutta. You must excuse me for not replying earlier, as I have just come off a month's leave and received the parcel just in time. After my arrival I was sent to bring a new engine just put together in our shops, which arrived from Dubbs & Co. I was careful to make good use of the graphite and ran my engine about 150 miles quite cool, and have had nothing hot on her as yet, while others, which are several, are having terrible trouble with their big ends. I recommended it to several and many of them are using the graphite now. Thanking you once more for the samples you so kindly sent me, just in time, especially for the new engine, I considered it a God-send."

What power you get for the coal you burn is largely a matter of how much indicated horse power you waste in useless work.

It has been repeatedly shown that a very little of Dixon's flake graphite added to the oil or grease, or perhaps used alone, in their stead, reduces the enormously costly friction loads carried in nearly all steam plants.

Lubrication methods must keep pace with modern heavy machine tools forced to tremendous duty.

Dixon's Pure Flake Graphite, bushing and glazing as it does the bearing surfaces, lowers the friction load and wholly prevents the possibility of abrasion. It renders unnecessary the wholesale drenching with oil in many shops.



## WHAT GEORGE NEIGHBOR THINKS OF GRAPHITE AS A LUBRICANT.

Superintendent First Kicks and Then Admits Graphite is the Cheapest Lubricant Ever Used, and Orders It Put on All the Bearings.

*Joseph Dixon Crucible Co.,  
Jersey City, N. J.*

Gentlemen:—I have been running engines for the past sixteen years, and in that time handled all kinds.

Engineers have "troubles of their own" in various ways, but the chord that clings to his heart closer than all others is that of proper lubrication.

When graphite was first brought to my attention as a lubricant I admit that I was skeptical, but the first trial satisfied me that thereafter it would be an indispensable article in my engine-room.

I will not endeavor to enumerate the many times that graphite has come to my rescue, but I remember one time very distinctly when I had charge of an electric plant that ran by both water and steam.

The transmission of power from the water wheel was made by gears, and the main bearing under the large gear wheel would not run cool—we tried oil and grease of all kinds without result, and while I had advised graphite from the start, it was not until we had melted the Babbit out several times that a requisition was put in for a 10-lb. can of Dixon's Graphite.

When the graphite arrived the superintendent brought it in to me and made the remark that it was "very expensive stuff," and I told him that long before the summer was over he would have his money back again ten times over.

The Sunday following the arrival of the graphite we re-babbited this bearing, and I used about 2 oz. of graphite with my grease, and started up that night—the plant ran night and day, and this week, for the first time, we ran through without a single stop. I continued the use of graphite on this bearing and never afterward found it warm.

About two months after this the superintendent asked me to get graphite on all the bearings possible, as that was the cheapest lubricant we had ever used, for beginning with the use of graphite we did not use as much oil and grease in one month as we had used in one week prior to this.

About two years ago I had charge of a 150 H. P. engine that had been in use nineteen years. In all this time I was told that the cylinder had never been rebored, and the cylinder head had never been removed but on one or two occasions.

Desirous of knowing the condition of this cylinder, I removed the head and made an examination, and in all my experience I do not think I ever saw a cylinder to equal it—it more resembled a mirror than anything else. Graphite had been used on this engine from its start.

I could give dozens of instances where I have cut my lubricating expenses one-half, and secured better results by the use of Dixon's Flake Graphite.

The difficulty that engineers in many large plants have is to get graphite. A requisition from the engineer has to pass through so much red tape that it never reaches the

buyers's desk, and I have known engineers to buy and pay for it themselves after repeated efforts to get it through their house.

It is a mistake for any concern to ignore entirely the advice of their engineer. If he is at all competent to have charge of their plant in a mechanical way he knows exactly what he wants, and if it comes to the point where they think he is asking for something that is not required it only naturally leads him to think that they consider him incompetent, and under these circumstances he should resign.

## DIXON'S ETERNO PENCIL AS AN INK-MAKER.

Mr. Paul Potter, photographer, Stamford, Conn., writes us a very interesting letter concerning Dixon's Eterno Pencil. We have seen many letters written with a Dixon Eterno Pencil, but have never seen a clearer or more-like-ink letter than the one which Mr. Potter sends us.

Mr. Potter says, "I think I have discovered two points that will bring a demand for this pencil:

*First*—For numbering negatives, until I tried a Dixon Eterno Pencil, it had been impossible for me to find a pencil that the different chemical baths would not remove the marks of. This is something that all photographers need.

*Second*—The lead of one Eterno pencil dissolved in half a pint of water makes an A No. 1 ink. It does not corrode the pens, and water will not remove the writing, as I have held a freshly-written sheet under the faucet for five minutes, and could see no change. The cost is less than 20 cents per quart, as the stumps of the pencils can be used to make the ink."

## AMERICA AND EUROPE CONTRASTED.

The personnel of the staffs of the industrial concerns of Europe, broadly speaking, may be said to be national for each country. In America, in the larger concerns, on a similar staff, are found associated men of many nationalities, working harmoniously. Europe is not generally an expert in creating a market; America, on the contrary, is. In Europe, once the market is made, they take care of it admirably. This America does not do so well. America is careless in the use of raw materials, because generally raw materials are cheap. In Europe the reverse is the case, because raw materials are dear. In America the highest efficiency is obtained from labor, because labor is dear; in Europe, the reverse. In America the value of products for the wage earner is \$2,450; in Europe it will not average over \$500.—W. J. CLARK, from *Engineering Magazine*.

## GRAPHITE FOR RUBBER GASKETS.

The Chief Engineer of a large manufactory in Troy, N. Y., writes us that he has a pressed rubber gasket on which he uses Dixon's Flake Graphite. This gasket has been in use for three years to his knowledge, and it is taken off every month. The gasket is still in good condition, and the chief engineer writes that if it were not for Dixon's Flake Graphite, a new gasket would have to be used every time the gasket is removed. In other words, a new gasket would be required every month, whereas one gasket has been in use for thirty-six months at least.

# OUR LONDON PAGE

All Communications, Inquiries, Etc., relating to this Page should be addressed to Joseph Dixon Crucible Co. (Geo. W. Wollaston, Mgr.), 26 Victoria St., S. W., London.

## MR. WALKER PAYS A VISIT TO JOHN BULL.

By the time these lines are in print, our honoured Vice-President and General Manager—John A. Walker, Esq.—will no doubt be with us here in London.

There are several matters which bring him over. One of least importance, perhaps, but not the least interesting is—his search for a real, thorough, old-fashioned London fog! So we have sent up a special Marconigram to the Clerk of the Weather, asking him to kindly oblige with the "London particular"; and we are all hoping to gratify Mr. Walker's curiosity during his present visit, since he is coming at the right time.

Welcome to old England, sir!



**MESSRS. YOUNGER'S MALTINGS, EDINBURGH.**

250 gallons of Dixon's No. 2 Silica-Graphite Paint were used for preserving the constructional ironwork of this building.

## CHAIN LUBRICATION.

Mr. J. H. Boam, our esteemed Leicester agent, writes us that he has introduced our Motor Chain Compound to several collieries in his district, and that it has been tested on the chains of Coal Cutters with most excellent results.

Previously, these people could not get anything to lubricate the chains efficiently.

Our Motor Chain Compound was mentioned in last month's GRAPHITE. It is a mixture of Dixon's Graphite with neutral animal and mineral lubricants, and is molded into hard, oblong cakes. These are melted down and the chain thoroughly immersed therein. With this treatment motor chains are thoroughly lubricated and protected for 3 months with the one application.

There is no doubt, we think, that our Compound is an ideal coating for all sorts of chains besides those of motor cars. Our Leicester agent's experiments corroborate this. Considerable orders have been placed with him for use on the chains of coal cutters, and users are delighted with the Compound.

We suggest other experiments. Samples free.

## YACHT PAINT. WHAT PAINT? DIXON'S SILICA-GRAPHITE PAINT.

GLASGOW, Aug. 16, 1904.

*The Joseph Dixon Crucible Co.*

GENTLEMEN:—Last December we supplied the S. Y. "North Star," owned by Cornelius Vanderbilt, Esq., of New York, with a few gallons of Silica-Graphite Paint (red), which was applied in the fore peak of that vessel as a test. The vessel has been in commission till the middle of July, and is now at Sandbank. The Capt. ordered some more Silica-Graphite Paint yesterday, and informs us he has never had like results from any other paint, and has instructed that it be applied throughout in bilges, etc. The paint work in fore peak is as good as when put on, no rust being visible.

Yours faithfully,

FERGUSON & TIMPSON.

## GRAPHITE IN WAR.

Graphite plays many parts, chiefly, we are glad to say, in the arts of peace and commerce. But it also has its place in the bombast of war. We are reminded of this by an urgent order from Russia—a large firm of ammunition and war equipment manufacturers there. We also have regular correspondents in the Yokohama Dockyard, to whom we send copies of this periodical; and we believe supplies of our graphite are ordered through the Eastern merchants. So that we are quite impartial in our dealings with the Far Eastern belligerents.

Qualities of Dixon's Graphite, used for glazing the powder, are found in all the principal gunpowder mills in Great Britain and Germany.

## THE MAN FRA' SHEFFIELD

knows a good thing when he sees—and tests—it. He has tested Dixon's Silica-Graphite Paint, and now it's coating, beautifying and protecting the pavilion in which he sits and watches his beloved cricket and footba'.

Other Clubs, take pattern by "the Blades!" Paint up now! Use Dixon's!

Dixon's Flake Graphite saves time, oil and trouble.

# Graphite

VOL. VI.

DECEMBER, 1904.

No. 13.

*Issued in the interest of Dixon's Graphite Productions, and for the purpose of establishing a better understanding in regard to the different forms of Graphite and their respective uses.*

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## THE MERIT OF QUALITY.

A Foreign Ministry, in considering the solicitation of a contractor for an extension of three years in his contract for supplying the Royal Mint with Dixon's Plumbago Crucibles, decided in favor of the contractor for two reasons:

*First*, for the convenience of the Administration.

*Second*, because, during the two and a half years the contract had been running, the high quality of Dixon's Crucibles had made it unnecessary to use more than one-tenth of the number of crucibles that the contractor had been given to understand would be required.

The quality of Dixon's Plumbago Crucibles is the element which makes them distinct from any other plumbago crucible. It is this quality which has

made them the standard for seventy-seven years.

The value and worth of the Dixon Crucible is known and acknowledged throughout the entire world.

## THE WARFARE OF BUSINESS.

Business is warfare. It's a hard, constant fight to the finish. The moment a contestant enters the field of commerce he is challenged by a host of competitors. All his movements are disputed and opposed by those already in possession of the field. He must fight to live. He must conquer to succeed. So it is that a man of business is like a soldier of the regiment. And like the well-trained soldier who delights in the clamor of battle, the enterprising business man is eager for the struggle of competition. He likes the excitement of contending for supremacy. He delights to overcome those who oppose him and he finds genuine pleasure in outwitting his rivals. It is this spirit of rivalry that sharpens a man's intellect and spurs on his energy. And unless a man is possessed of this desire to overcome, to surpass, to stand first in his line, he can never hope to carry the day, he will never succeed in the fight.

Profit, which is the reward of industry and ability in business, is not the sole object and consideration that actuates the really successful man. The love of gain cannot in-

spire him to the highest endeavor. There must be something greater, something more enduring to call forth his supreme efforts and satisfy his ambition. And that is something in the same spirit that is possessed by the men of war who go into battle to do or die—who fight to win and forget all else.—S. W. P. in *Stoves and Hardware Reporter*.

## THE WIND AROUND THE EAVES.

I love to watch the billows leap  
And see their white foam pour,  
As they break upon the shining sands  
That girts old ocean's shore,  
And I love to list' the wind that weaves  
Its eerie song around the eaves.

It brings the scent of new mown hay  
The odor of pines from far off hills,  
It comes from the woods where mosses gray  
Cling to the rocks among twinkling rills,  
And its cool breath stirs the ivy leaves  
As it winds its way around the eaves.

When winter comes with sleet and rain  
Round rayless suns and sullen skies,  
When frost lies thick upon the pane,  
I lie 'till sleep shuts down my eyes,  
And listen to the wind that grieves,  
And sobbing creeps around the eaves.

—Lucy M. Stocking in *St. John's Bulletin*.

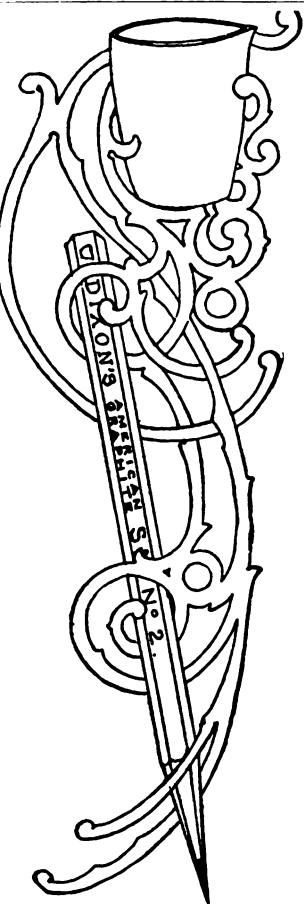
## AN EVERLASTING PENCIL.

A man called at the Philadelphia branch of the Dixon Company and said he didn't see how the Dixon Company could make money on the sales of the Dixon "Eterno" pencil. He said he had had one for three months, and had used it on paper, wood, and had even marked on stone with it, and yet it is not one-third used.

## BIG, AIN'T IT?

In July, 1904, traffic through the canals of the Soo was nearly six million tons for the month. This is twelve thousand million pounds per month, and is four hundred million pounds each day. Stop a moment and think it out. Four hundred million pounds of freight through this one channel every day, sixteen and one-half million pounds every hour, nearly three million pounds every minute, about forty-five thousand pounds every heart beat.

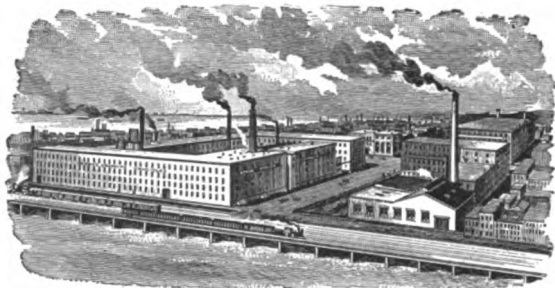
—J. A. WALKER.



ESTABLISHED 1827.



INCORPORATED 1868.



## JOSEPH DIXON CRUCIBLE CO.,

JERSEY CITY, N. J., U. S. A.

### BRANCHES AT

68 Reade St., New-York. 1020 Arch St., Philadelphia.  
304 Market St., San Francisco. 26 Victoria St., London.

### RESIDENT REPRESENTATIVES AT

Boston, Chicago, St. Louis, Pittsburg, Paris, Hamburg, Vienna,  
Amsterdam, Brussels, Berlin, Dresden, Milan, Lisbon, Copenhagen,  
Warsaw, Barcelona, Bergen, Horgen (Switzerland), Finland, Havana.

GRAPHITE MINES AND MILLS AT TICONDEROGA, N. Y.  
CEDAR MILLS AT CRYSTAL RIVER, FLA.

### OFFICERS:

E. F. C. YOUNG, JOHN A. WALKER, GEO. E. LONG,  
*President. Vice Pres. and Treas. Secretary.*

JERSEY CITY, N. J., December, 1904.

### DIXON'S GRAPHITE AXLE GREASE.

Of the eighty millions of people in the United States few have ever heard of Dixon's Graphite Axle Grease.

There are, however, many users of this Axle Grease, and those who use it could not be pulled away from its use by an ox team.

Dixon's Graphite Axle Grease is known and used from Maine to California.

Mr. C. E. Stevens of Readfield, Me., says: "One dollar's worth of Dixon's Grease runs my 19 carriages and wagons two years, and keeps the boxes and spindles in the best of shape. Do you wonder that I like it?"

Mr. Charles B. Mullaly, President of the Carter-Mullaly Transfer Company, San Antonio, Texas, wrote us in December, 1903: "I bought a half barrel of Dixon's Everlasting Graphite Axle Grease, and still have plenty on hand. Dixon's Graphite Axle Grease, besides being cheaper than anything else we have ever tried, is the finest grease and it keeps our rigs in the best of shape. You can draw upon us for the strongest possible recommendation for Dixon's Graphite Axle Grease."

The Captain of an Engine Company of the Fire Department, of one of the large cities, says: "June 25th, 1903, I applied Dixon's Graphite Axle Grease to the axles of our engine, and after 15 weeks, during which time we responded to 30 alarms, I examined the axles and found them in fine condition, and not needing any attention.

Four weeks after that, and after answering 18 more alarms, we made another examination, and found the axles in still the same excellent condition. Our engine weighs 5,600 pounds."

A Doctor writes us: "For many years I have used Dixon's Everlasting Graphite Axle Grease with a degree of satisfaction never attained by any other lubricant. My supply being nearly exhausted, will you kindly send me by American Express a half dozen one pound cans. This of course is not all for my own use; I would require an extension to my life's tenure before using it; I will dispose of part of it to another party."

A dealer in wagons, carriages, etc., says: I have used Dixon's Everlasting Graphite Axle Grease for 20 years, and have found nothing to equal it. I want an axle grease in which I can have confidence, and know that the wheels of my wagons will not stop before my customers get home."

Dixon's Graphite Axle Grease is equally useful for the heaviest trucks and the lightest wagons. It protects the bearings from rust and does not clog in cold weather. Any of our readers who are not familiar with this axle grease, and who would like to know about the most economical axle grease ever used, may receive a sample and descriptive circular on request.

### DIXON'S GRAPHITE FACINGS FOR RADIATORS.

We have much pleasure in publishing, with permission, the following letter:

THE J. H. McLAIN COMPANY,  
MANUFACTURERS OF  
HOT WATER AND STEAM HEATERS,  
RADIATORS AND SUPPLIES.

CANTON, Ohio, July 16, 1904.

*The Jos. Dixon Crucible Co., Jersey City, N. J.*

GENTLEMEN:—"In answer to your inquiry as to how your Plumbago is suiting us, we are pleased to say, we had been using several grades prior to yours, and in one department particularly, the Radiator Department, we had been having considerable trouble with the iron cutting through the facing and making rough castings.

Since using the special facing you sent us, which costs us four and a half cents (4½c.) per pound, as against a price of one and three-fourths cents (1¾c.) which we used to pay, your Facing is saving us a great deal of money, at the price, and we can only say we expect to continue it, on its good merits."

Yours very truly,

THE J. H. McLAIN COMPANY,  
P. L. McLAIN,  
Sec'y and Treas.

### DIXON'S STENOGRAPHER PENCIL.

The Principal of a State Normal School wrote as follows:

"Please send us six (6) dozen of Dixon's Stenographer Pencils, No. 489. We have tried many varieties of pencils for shorthand work, and we find that Dixon's No. 489 is the finest pencil for the purpose we have ever used."



## THE PROPER ANNEALING OF CRUCIBLES.

CHICAGO, Aug. 17, 1904.

Too much importance cannot be attached to the proper care of crucibles after they are received at the brass foundry. Once in a long while we have a man write us something as follows: "The last shipment of crucibles received from you is defective. Some of them break even before we get them into the fire, and others flake off in the first heat." This is what is technically termed "a scalp," and no matter how much care the manufacturer gives to *his* work, unless the pot is properly annealed, or seasoned, this scalping is liable to occur. The cause of it is moisture which enters the walls of the crucible, sometimes clear to the center, while the goods are in transit. A leaky freight car and a rainy day are sufficient to cause the trouble. It is also to be remembered that a crucible gathers moisture the same as a bucket of salt. Everybody knows that in muggy weather the salt won't come out of the shaker, although it is inside the house and in what might be termed a dry place. The putting of crucibles in a dry place, however, may not be sufficient to prevent their scalping.

The average brass founder opens the cask when it comes in and puts the crucibles on the back of the furnace, and after a week or ten days starts in to use them, without other annealing. He places the pot mouth down on a slow fire in the morning, and if one of them happens to scalp, the *crucible* is blamed.

We would suggest to our friends that a more severe annealing than this will not only prevent the scalping absolutely, but will also increase the life of the crucible, and although it is a little bother and it will take some time to properly anneal crucibles, it will pay in the long run.

If the brass shops were equipped with an oven in which they could put the crucibles and bring the heat up slowly and gradually from nothing to a red heat, the annealing could be done in two or three days, but the average foundry is not so equipped.

We offer the following suggestions, which will be found perfectly expedient in every brass foundry:

*First*—Unpack the crucibles and place as many of them as possible on the flues back of the furnace. Here they will be heated to a sufficient degree so that they cannot be handled without burning the fingers. They should be left in this position from one to three weeks.

*Second*—At night, after the fires are drawn from the furnace, and the furnace is allowed to cool for, say, fifteen minutes, open the furnace wide, lay a shank across the top, place a crucible on the shank (mouth down) over the center of the furnace so that the remaining heat in the furnace will come up during the night and strike not only the inside but also the outside of the crucible. Repeat this three or four times.

*Third*—Draw the fires as before, allow the furnace to cool twenty to twenty-five minutes, place the pot (mouth down) on the grate bars of the furnace, allow it to remain all night. Repeat this the second night, only giving the furnace ten or fifteen minutes to cool off. Repeat again the third night, and this time leave the cover on the furnace.

By this method a crucible will be brought up to a red

heat slowly and gradually, and whatever moisture may have been within the walls will be expelled without any steam. It is the expansion of the moisture and the generation of steam which blows a piece, or flakes off the pot.

Some foundrymen will say that so much annealing is unnecessary; that they have followed a different practice for twenty years and have had very little trouble. The answer to this is: Scalps are not of frequent occurrence, and it might be a year or two between troubles of this kind, but when they *do* occur they are expensive. It is not every shipment that gathers moisture. We have seen crucibles taken out of the cask and immediately put into the fire without detrimental results, but the user is assuming considerable risk in so doing.

As an evidence that this "flaking off" is caused by moisture, we would say: Nobody ever saw a crucible scalp after it had safely gone the first heat, which is proof positive that the bringing of the crucible up to the heat necessary to melt brass, expels from it *all* the moisture, consequently after the *first* heat there is no danger of a scalp.

DUDLEY A. JOHNSON.

## GRAPHITE FOR THREADED JOINTS.

If all threaded joints, not only all piping connections, but also bolts, nuts, etc., were screwed up with a little graphite on the threads, instead of painting them with red or white lead or other cements, more satisfactory results would be obtained. Graphite, especially flake graphite, is a lubricant that enables a closer, tighter joint to be made with ease. Graphite is a chemically inert substance and not affected by heat, cold, gases, acids or alkalies, and its smoothness allows it to be thinly spread over the threads, filling every crack and pore. This layer remains between the threads indefinitely, and when it is desired to break the joint only a very moderate effort is required, as compared with joints which have rusted or are filled with hardened lubricant. Joints screwed up with graphite cannot corrode or set, so that even years after they can be easily taken apart without damage to tools or fittings. The very best form of graphite for pipe fitting, as far as we know, is Dixon's Graphite Pipe Joint Compound, an article which has been tried and proved for over twenty years. The makers, the Joseph Dixon Crucible Company, of Jersey City, N. J., will gladly send all interested a copy of a neat descriptive booklet and a free sample of Dixon's Graphite Pipe Joint Compound.—*Progressive Age*.

## DIXON'S PENCILS AND CRAYONS WITHOUT A PEER.

WALLACETON, Ky., Aug. 17, 1904.

Messrs. Joseph Dixon Crucible Co.,  
Jersey City, N. J.

My Dear Sirs:—Kindly accept many thanks for the generous supply of materials and prompt attention given my request. Your pencils and crayons stand without a peer, and are suitable for all kinds of expressive work from the Kindergarten to University.

Very kindly yours,  
EMMA J. HAAGEN,  
Supervisor of Drawing.

### A GOOD STORY.

*The Journalist* prints the following in an after-dinner speech of Mr. Conne, of the International Advertising Association :

Mr. Conne said that the representative of a Hebrew paper called upon him not long ago soliciting an advertisement. It seems that the polite circulation of a Hebrew journal is sixty thousand; more is looked upon with incredulity by the advertiser, and less fails to reach the proper limit. After the solicitor had unfolded his tale, Mr. Conne said :

"What is your circulation?"

"Sixty thousand copies."

"Sixty thousand every week?"

"Yes; sixty thousand copies every week, 's help me Moses!"

"Will you guarantee me sixty thousand copies?"

"I gife you my sacred vord of honor dot ve circulate sixty t'ousand copies every week."

"Will you make an affidavit to that effect?"

"Sure."

"I'll bet you fifty dollars to five you can't prove it."

"Vell, I wouldn't like to bet money on a t'ing like dot."

### INITIATIVE.

Elbert Hubbard says : "The world bestows its big prizes, both in money and honors for but one thing, and that is Initiative."

"Initiative," he says, "is doing the right thing without being told, but next to doing the thing without being told, is to do it when you are told once. There are those who never do a thing until they are told twice. Again there are those who do the right thing only when necessity kicks them from behind. This kind spends most of its time polishing a bench with a hard-luck story. Then, still lower down in the scale, we have the fellow who will not do the right thing even when someone goes along to show him how, and stays to see that he does it; he is always out of a job and receives the contempt he deserves, unless he has a rich Pa, in which case Destiny patiently awaits around the corner with a stuffed club. To which class do you belong?"

THERE slipped out the other day from a bunch of old papers, the following order for Dixon's Crucibles :

DORCHESTER, Mass., June 3, 1851.

Messrs. Joseph Dixon & Co.

GENTLEMEN :—I am now in want of another lot of crucibles. I am using a good many of them, and you may send me by Fall River route, the following :

3 barrels No. 18.

1 barrel No. 20.

1 " No. 25.

Send any time within eight or ten days, and I will remit.

Respectfully,

(Signed), ROSWELL GLEASON.

If the active and energetic readers of GRAPHITE will indulge in a little retrospection, they will be much better able to grasp what fifty-four years ago means.

## Productions of the Dixon Crucible Co.

**Dixon's Black-lead Crucibles and Retorts**, all sizes and for all purposes. Bowls, Dippers, Stirrers, Stoppers, Nozzles, Muffles, Sleeves, etc.

**Dixon's Brazing Crucibles**, made in several shapes for dip-brazing.

**Dixon's Graphite Boxes and Covers**, for baking carbons and filaments for electric lighting.

**Dixon's Fine Office and Drawing Pencils**, unequaled for smooth, tough leads and uniformity of grading.

**Dixon's Colored Crayons**, in wood or solid. For schools, railroads, editors or factory.

**Dixon's Lumber Leads**, black or colors; for green or dry lumber.

**Dixon's Felt Erasive Rubber**, for erasing pencil marks, typewriter work or ink.

**Dixon's Carburet of Iron Stove Polish**, the old reliable; in cake or bulk form.

**Dixon's Pure Flake Lubricating Graphite**, a solid lubricant for all frictional surfaces.

**Dixon's Special Graphite No. 635**, for lubricating cylinders of gas engines and all close or delicate mechanical parts.

**Dixon's Electrotyping Graphite**, used by the majority of practical electrotypers of this country.

**Dixon's Hatter's Lead**, for coloring hat bodies.

**Dixon's Plumbago for Shot Polishing.**

**Dixon's Plumbago for Powder Glazing.**

**Dixon's Plumbago Foundry Facings.**

**Dixon's Yacht Plumbago**, for lubricating and smoothing bottoms of yachts.

**Dixon's Graphite Waterproof Grease**, for gears, wire ropes, hoisting chains and general machinery.

**Dixon's Graphite Axle Grease**, better and cleaner than castor oil for trucks, wagons, carriages.

**Dixon's Graphited Wood Grease**, for use on trolley car gears which are enclosed in a gear case.

**Dixon's Graphited Oil**, for use in all places where the use of a gear grease is impracticable.

**Dixon's Graphite Cup Greases**, for use in cups or open bearings, on spindles, shafting, etc.

**Dixon's Oiled Graphite.**

**Dixon's Lubricating Compound No. 688**, for enclosed gears of electric automobiles.

**Dixon's Silica-Graphite Paint**, for metal or wood-work, roofs, bridges, telegraph and trolley poles, smoke-stacks, boiler fronts, and iron construction work.

**Dixon's Graphite Pipe-Joint Compound**, for steam, gas and water piping, smearing gaskets and flanges.

**Dixon's Automobile and Bicycle Lubricants.**

**Dixon's Graphitoleo**, for lubricating bicycle chains, sprockets, pivots and pins; gun locks, and for general use.

**Dixon's Commutator Graphite**, will glaze commutator with the finish so much desired by electrical engineers.

**Dixon's Motor Chain Compound**, for perfectly lubricating transmission chains.

**Dixon's Crucible Clay and Graphite Mixture**, for lining and repairing fire boxes.

**Dixon's Stove Cement**, for repairing stove or range lining.

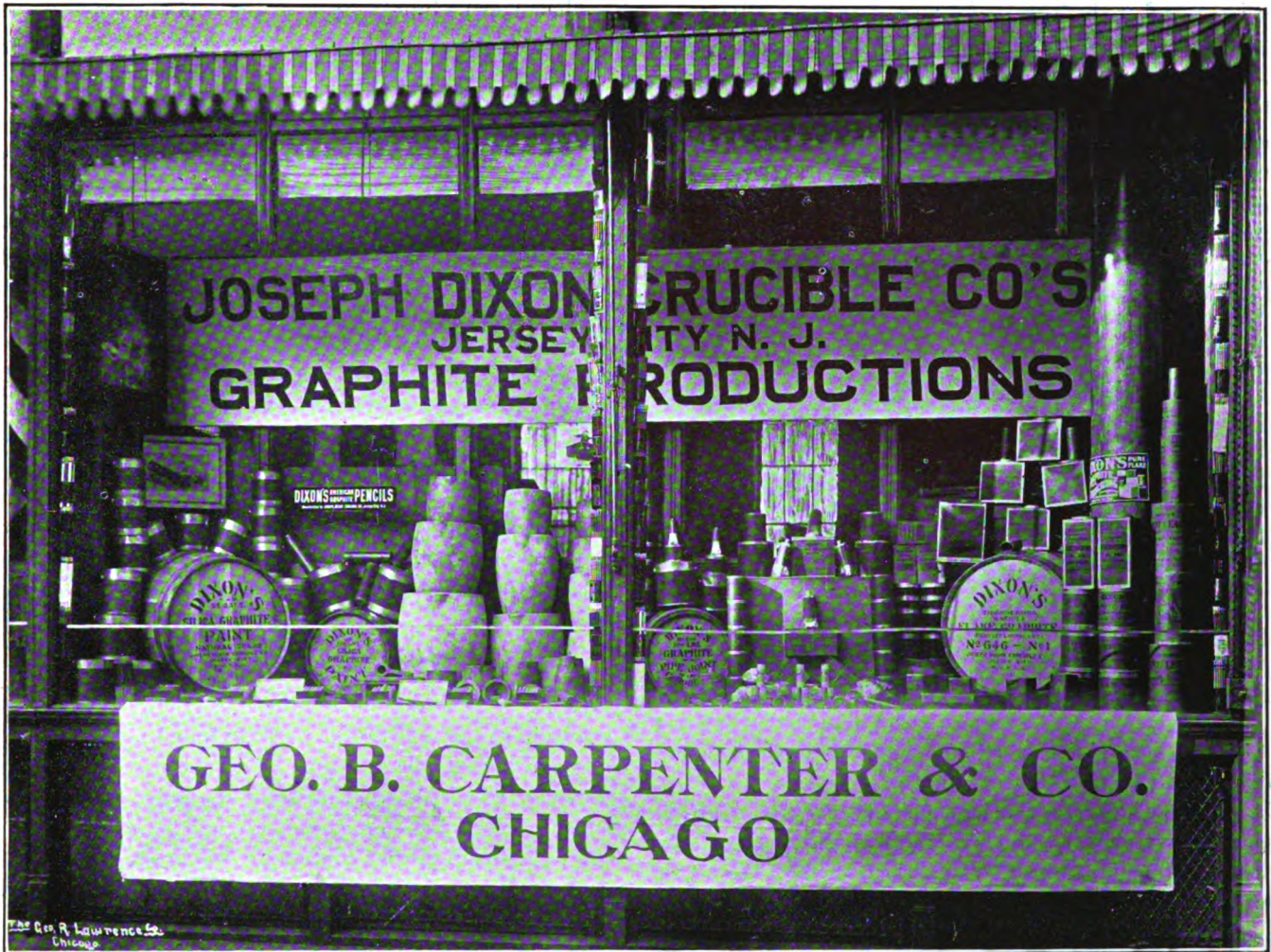
**Dixon's Traction Belt Dressing**, for preserving leather belts and to prevent slipping.

**Dixon's Solid Belt Dressing**, convenient for those who prefer a solid dressing.

**Dixon's Graphite Resistance Rods**, from one-eighth to one inch diameter; any resistance required.

**Dixon's Graphite Products for Electricians.**

Special circulars with detailed information sent on request.



The above picture is very pleasing, in showing, as it does, the interest that dealers take in Dixon's graphite products.

Messrs. Geo. B. Carpenter & Co., the large and widely-known firm of ship chandlers, jobbers and mill agents, have made a most attractive window display of the line of Dixon's graphite products carried by them.

So unique is this display, made up, as it is, of Dixon's many grades and kinds of lead pencils, graphite axle grease, belt dressings, plumbago crucibles, Ticonderoga flake graphite, graphite greases, automobile lubricants, graphite lubricants for general and special purposes, graphite paint for protection of metal surfaces, special graphites for the sportsman and the yachtsman, graphite specialties for electricians, stove polish for the housewife, and graphite materials for the foundryman, the steamfitter, and the engineer, that the passersby seem never to weary in looking at the display, and are lost in wonder when told that there is not an industry in the civilized world, or man, woman or child, that does not use graphite in some one of the many forms, and that the Dixon Company is not only the largest, but the only one of the kind in the world.

#### CASTING ALUMINUM.

The matter of casting aluminum for pattern work is assuming such prominence, that a little general information on this subject will not come amiss. It is important to make the mold suited to the casting. For instance, a plain bar can be molded up as hard as may be, and if well

vented, will come out perfect. On the other hand, a thin ring, unless molded up soft enough to allow the metal to compress it, will be sure to tear apart. Hence, wherever the metal is to enclose the sand, this must be left as soft as possible, to allow for compression during the cooling of the casting.

Ram the sand as little as possible, use as dry as possible, vent freely, and you are pretty safe. Aluminum is quite brittle at the critical temperature, hence the least strain at that time injures it. Cores should be soft, and coated with graphite. The sand should be new, and while no facing is necessary, a good dusting with soapstone can be recommended. The slicking tool should never be used on a mold.

Melt the aluminum in a plumbago crucible, previously rubbed up with graphite. When the metal is melted, it should be poured at once. Gates should be wide, and of a generous area. Big feeder heads are not advisable, as they do not feed, but rather draw away the metal from the casting. The metal should not be too hot, a good claret color is sufficient, when observed by putting aside the skin with a stick. Fluxes are unnecessary; occasionally, however, cryolite may be used to advantage. All sodium salts should be kept away. Zinc can be added, though the metal should not then be sold as an aluminum casting. Up to fifteen per cent. can be used safely. Tin should also not be added to the aluminum.—*The Mechanical World.*



### GRAPHITE FOR LUBRICANTS AND PIPE JOINTS.

The Joseph Dixon Crucible Company, of Jersey City, N. J., U. S. A., has made wonderful progress in the development of uses for graphite, which, under its impetus, has become an important feature of commerce, both domestic and foreign. It has demonstrated that flake graphite, when properly mixed with greases, is an invaluable ingredient for enhancing the lubricating power of the grease. It has manufactured for some time, and placed on the market, Dixon's Graphite Cup Grease, which it claims



to be the most effective lubricant known, and a package of which is here shown in an illustration.

Experiment and experience have shown that the addition of pure flake graphite to oils or greases increases their efficiency and endurance as lubricants. It enables the oil or grease to do heavier duty, and, with addition of this ingredient, a thinner, less viscous oil or grease may be used with perfectly satisfactory results. The graphite fills up low spots and scratches through the grain of the metallic surfaces of the machine to which it is applied, forming thereby a perfectly even, tough glaze, of exceeding smoothness on the rubbing surfaces, and reducing the necessity for more than a relatively small quantity of oil or grease. Cutting of a bearing surface thus coated is impossible, and there is a great reduction in the natural tendency of bearings either to warm up or overheat.



Dixon's Graphite Cup Greases are made in six degrees of hardness, from the consistency of soft vaseline to that of tallow, but with somewhat more cohesiveness. The softer grades are for use in the lubrication of light, high speed spindles, and may be fed by means of compression cups, or in open bearings. The harder grades are suitable for work more severe, so far as pressure is concerned. They are

excellent marine lubricants, assuring cool and smooth operation of thrust, tunnel shaft, and main bearings, as well as auxiliaries.

Another field in which the use of graphite has proved most advantageous is the fitting of pipe joints. When oil is used alone to facilitate the work, the joint can be screwed up without trouble, and, for a time, will remain perfectly tight, but not permanently so. As the oil is burned out or otherwise destroyed, rust rapidly works in between the threads of the screw, and a rust joint forms. If the joints are screwed up with graphite on the threads, the graphite will be thoroughly distributed over the surfaces, filling in all the smallest chinks and pores in the metal, and forming a good, smooth and impervious coating of lubricant and rust-preventive that enables the joint to be opened many years after it has been closed. The best form of graphite for pipefitting purposes is Dixon's Graphite Pipe Joint Compound. It has been in process of manufacture for more than a quarter of a century, and has stood the test of time.—*Exporters and Importers Journal*.

### AN ELECTROLYTIC ANTI-FRICTION METAL.

We are often asked concerning anti-friction metals said to contain graphite. So far we have found none that have contained any visible graphite. The one described in the following, which we reprint from the *Electrical Review*, seems to be one made on an entirely new plan:

Metallic compositions containing graphite, and intended for anti-friction metals, are produced in a number of ways. A greater number of these, says Herr Josef Rieder, contain, in addition to the graphite and the metal, other materials which are objectionable. These are generally added in the form of binders, and are such substances as water-glass, lime, asbestos powder, etc. The use of such materials is not necessary if the metal itself may be made to bind the graphite. A method devised by the author consists in depositing electrolytically in a suitable mould copper or any other desirable metal over the graphite particles. The moulds, which must be of non-conducting material, are constructed of plaster of paris, saturated with paraffine.

The surface of the mould is coated with graphite to render it conducting, and over this is placed a layer of graphite particles about the size and having the irregular form of No. 30 carborundum. This layer is conveniently made by means of a fine sieve or floated over on alcohol. The electrolyte is the ordinary acid solution of copper sulphate. The anode of the metal to be used and the current density must not be too great, or the deposit will be porous. As soon as sufficient copper has been deposited to hold the graphite particles firmly, a second layer of graphite should be made, and the process continued until the desired thickness is obtained. This material is thought to be very suitable for dynamo brushes. It should not be much more expensive than ordinary electrolytic copper. It is also thought to be suitable for packing rings, as it is not affected by very high temperatures.—*Translated and abstracted from the Elektrotechnischer Anzeiger (Berlin)*.



### PROPERTIES OF GRAPHITE.

Graphite is one of the purest forms in which carbon occurs in nature. It possesses a bright lustre and is very smooth and soft. It is unaffected by heat or cold and is not acted upon by acids or alkalis. It has a strong attraction for the metals and when rubbed on them forms a surface of great smoothness. As all bearings are more or less rough, the advantages of graphite as a lubricant lie in the fact that it fills up these small uneven places and makes them smooth and mirrorlike, so that when oil or grease is used, it relieves them of this service which they would otherwise have to perform, making lubrication more effective and increasing the wearing qualities of the oil. When used in cylinders of steam engines, either alone or with oils, it tends to polish both the valve seat and the interior of the cylinder. It is especially valuable when high temperatures are encountered, as in the cylinder of a gas engine, where temperatures as high as 3000° F. are met with. It can be fed into the cylinder of an engine in the usual way or by means of a hand pump, several times a day. Force feed lubricators offer the best means of insuring a steady, closely regulated supply of graphite, mixed with oil or water, to either cylinders or bearings. When mixed with grease it can readily be used in any compression grease cup.—*Practical Engineer.*

### THE OWNER OF THE PENCIL.

They were two pretty girls, modest in their demeanor, but alive to their surroundings. The two young men had noticed them on the platform, and on the train had secured seats just behind them. The girls had in no way encouraged these attentions, and yet they could not be unconscious of them.

The young men held a whispered consultation, and then leaning across the aisle one of them requested the loan of a pencil from an elderly man sitting there. With sly smiles toward the seat in front a note was written, the pair collaborating. There was evident intent of dropping this note into the lap of one of the girls; but the man whose pencil had been borrowed interposed quietly but firmly.

"Permit me to read the note first," he said with the utmost politeness. "I make that an inviolable rule with my daughters' correspondence with young men."

An instant later there were two vacant seats, and on the platform two young men waited, red and impatient, for the first station.—*N. Y. Tribune.*

My son, the world is dark with griefs and graves,  
So dark that men cry out against the heavens.  
Who knows but that the darkness is in man?  
The doors of Night may be the gates of Light;  
For wert thou born or blind or deaf, and then  
Suddenly heal'd, how wouldst thou glory in all  
The splendours and the voices of the world!  
And we, the poor earth's dying race, and yet  
No phantoms, watching from a phantom shore,  
Await the last and largest sense to make  
The phantom walls of this illusion fade,  
And show us that the world is wholly fair.

—*Tennyson.*

### THE JAPANESE PROVERB.

"Roses have thorns" and "Walls have ears" are as common in the Japanese speech as in our own. We say "More haste, less speed," but the Japanese phrase is, "If in a hurry go round." In this country we very often remark that "Accidents will happen in the best regulated families. The Japs, on the other hand, with an eye to the picturesque, vitalize it, so to speak, in their "Even a monkey sometimes falls from a tree." One of our useful English sayings is, "Those who play with edged tools must expect to cut their fingers." In expressing a similar thought the Jap goes us one better so far as picturesqueness is concerned. He says, "If you keep tigers you are likely to have trouble." One of our standard maxims is to the effect that "Oil and water won't mix." The Japs have not improved on this. "You can't rivet a nail in a custard" is their way of putting it. "The lotus springs from the mud" is their poetical expression of the common thought that "Out of evil good may come."

What could be more suggestive and at the same time so poetic as their "Scattering a fog with a fan?" When a Jap undertakes the impossible his neighbors do not scoff at him or mock him. They simply say that he is "Building bridges to the clouds" or that he is "Dipping up the ocean with a shell." Failure in such a country must be as delightful as success in our more material land. "Thine own heart makes the world" is worthy of Emerson or Browning.—*Ourselves.*

### GRAPHITE SUGGESTIONS.

Possibly no other substance is so wonderfully diverse in its application as graphite. In almost every possible calling, in all parts of the world, graphite is used in some form. The savage who has learned to handle a firearm uses it, for his powder has been at least partially made by graphite. His forefather used it in his war paints. In distant Japan graphite serves as a harmless coloring agent, for it gives to certain grades of tea their uniformity of color. In South America coffee is polished with it. Electricians, chemists number it among their serviceable materials. It is also used by printers, hatters, engineers, housewives—in a word, everybody uses it, consciously or unconsciously. "Graphite Suggestions" is the title of a publication which presents most interesting facts concerning graphite products. It is issued by the Joseph Dixon Crucible Co. of Jersey City, N. J., and copies are obtainable on application. For more than three-quarters of a century the Dixon Company has manufactured graphite in innumerable forms. It works its own mines besides. This experience of decades is embodied in a quality which has been imparted to Dixon products and renders their use safe and profitable. The company's book is not a catalogue, but an interesting treatise on a substance which has so many and so peculiar properties that no other single substance, it is stated, can possibly perform the same functions.

—*Manufacturers' Record.*

### OUR LONDON PAGE.

This month we are obliged to go to press without our London page, as copy failed to reach us in time.

### LO, THE POOR HEATHEN!

[Tacoma, Wash.—H. F. Krohnskyn, of Seoul, Corea, is on his way to New York and Philadelphia to contract for idols to be used in the temples of his country as well as in China. He is sent by a wholesale firm, and has models with him. He says that a few years ago an American firm sent a few idols as a gift to one of the sacred orders, and a demand for them has resulted.]

"The heathen in his blindness  
 Bows down to wood and stone"—  
 Some idol inexpensive  
 He puts upon a throne:  
 But now we'll teach the heathen  
 The error of his way,  
 And sell him modern idols  
 Made in the U. S. A.  
 We'll lift the foolish heathen  
 From groping in the dust,  
 And change and civilize him—  
 We'll form an Idol Trust.  
 For ages he has grovelled  
 In superstition dim,  
 But now we'll help his progress  
 By making gods for him.  
 No seven-handed figures;  
 No gods with coiling tails;  
 No birds, no bugs, no serpents,  
 No animals, nor whales—  
 No, sir! He'll have our idols;  
 A shovelful of coal,  
 A meter, and an oil can  
 To terrify his soul.  
 A bonnet and a ribbon;  
 A bargain ad.—the strife  
 They'll cause will make the heathen  
 Yearn for a better life.  
 The poor, benighted pagan  
 Will come out of the dark  
 And bow before our idol—  
 The mighty dollar mark!

—*Chicago Tribune.*

### DIXON'S PIPE JOINT COMPOUND.

#### In Underground Use.

We have a letter from one of our customers in New York State, advising us that in July, 1901—over three years ago—they laid some pipes underground and used Dixon's Graphite Pipe Joint Compound on their threads.

Three weeks ago they had occasion to pull them up and take the joints apart, and "the joints came apart as easily as if made up yesterday."

Jones—"It is just impossible for me to keep a lead pencil. People are always borrowing, you know, and they always forget to return." Brown—"Why, I never have any trouble. See, I've got a whole vestpocketful of pencils." Jones—"Doesn't that prove just what I said?"

—*Boston Transcript.*

### DIXON'S GRAPHITE PIPE COMPOUND.

The master car builder of an important railway company, whose name we are not permitted to publish, writes us as follows:

"We are still using Dixon's Graphite Pipe Joint Compound and we shall continue to use it until we find something better, but up to date we have still to find its equal."

### DIXON'S GRAPHITE JOINT COMPOUND.

Fit for the fitter's most particular work is Dixon's Graphite Pipe Joint Compound. It insures the closest joints with the least trouble. It resists every form of corrosion, but does not resist a reasonable effort, if the necessity for separating joints or flanges arises.

It is a revelation to those who have been taught to use other forms of pipe compounds and cements.

### MINERS, IMPORTERS, MANUFACTURERS.

The Joseph Dixon Crucible Company started the graphite industry in 1827, by manufacturing the first plumbago crucible ever made. To-day the company leads the world in the production of plumbago crucibles, foundry facings, protective paints, graphite lubricants. It is the largest concern of the kind in existence.

### DIXON'S GRAPHITE AXLE GREASE.

Even if we are familiar with an article and are thoroughly satisfied with it, it is nevertheless pleasing to know what others may think of it. We therefore give the substance of two letters recently received by us concerning Dixon's Graphite Axle Grease:

"I have used Dixon's Graphite Axle Grease for ten years and have found it very good. It does not run like some other greases and I have never had a hot axle since using it."

"I have given Dixon's Graphite Axle Grease a good test and I believe it to be the best lubricant I have ever used on light wagons."

When it is remembered that Dixon's Graphite Axle Grease has, as its basis, the world-famous Ticonderoga Flake Graphite, and that only the best oils and greases are used in its composition, there is no reason why the axle grease should not have the reputation that it enjoys.

### DIXON'S POTLEAD FOR TOBOGGANS.

We have lately had an order for a package of Dixon's Potlead, for use on the bottom of a racing toboggan, the order coming from Montreal, Canada.

As a matter of fact, Dixon's Potlead ought to be as good for eliminating friction in toboggan racing as it has been and is for reducing friction on the bottoms of racing yachts.

Anderson, Ind., Oct. 24, 1903.

This is to acknowledge your favor and an 'Eterno' pencil you sent me at Plainfield, Ind. I think the 'Eterno' is just grand. It fills the bill completely, is of convenient size, proper hardness of lead, and gives a perfect copy. I use them exclusively. Many thanks for your promptness.  
 Jno. R. Moore.

## UNDERLOADED ENGINES.

By W. H. WAKEMAN.

When I first read the statement that underloaded engines were not economical, I was very much inclined to doubt it. This was due to the fact that for several years I had run an engine that was sadly overloaded at times, making the speed unsteady, hence unsatisfactory, also causing much delay in doing the work because there was not power enough to carry it on properly.

Of course, it is better to have an engine just right for its load, but as that is not possible in all cases, one that is too large will result in less loss than if it were so small that uniform speed could not be maintained.

As a rule, when we speak of an economical, or of a wasteful engine, we refer to the amount of coal required per horse power her hour, and nothing more is taken into consideration. But this is only one point, yet it is very important, hence we will review it first.

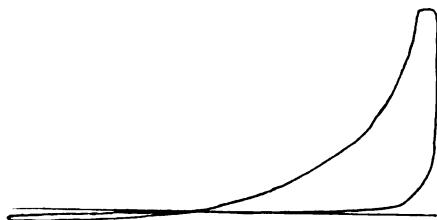


FIG. 1.

The indicator diagram shown in Fig. 1 illustrates conditions that are found where an engine is larger than is actually necessary. The cut-off valve closes when the piston has traveled but a small part of the stroke, and as expansion begins at once, pressure is reduced to zero by the gauge at one-half stroke. Momentum of the fly wheel and other moving parts, carries the piston to the end of stroke, but pressure is further reduced until a respectable degree of vacuum is formed at the end of stroke. It would be much nearer a perfect vacuum if the steam did not continue to expand.

Under certain conditions the temperature of steam corresponds to its pressure, and change of pressure affects the temperature in all cases. In the case of a boiler where the pressure changes gradually, the steam gauge is a true indicator of the temperature, but the conditions are quite different in the cylinder of an engine, because the changes are made so much more rapidly. If we take an engine making 180 revolutions per minute, changes of pressure on each side of the piston occur three times every second. The diagram in Fig. 1 shows a change of, say 100 pounds between the initial and the terminal pressure, but these changes are made so rapidly that there is not time enough for the cylinder walls to cool and heat to temperatures corresponding to these pressures.

No matter how fast an engine runs, there is always time for the steam to be affected as follows: Again referring to Fig. 1, the pressure and temperature are high at the beginning of stroke, while both are low at the end of it, assuming that there is time enough allowed for the change of temperature. We know that its changes are considerable, therefore after this stroke is completed the piston reverses its motion and commences another stroke. Steam admitted

at this time comes in at a high pressure and temperature, but it strikes the cylinder walls, cylinder head, ports, &c., which are at a lower temperature, resulting in condensation of a portion of it in raising this temperature. As this is a dead loss of heat, it reduces the efficiency of engine, so that when we divide the pounds of water evaporated per hour by the horse power developed, the quotient is large, denoting a wasteful condition of affairs.

Fig. 2 illustrates a diagram from the same engine carry-

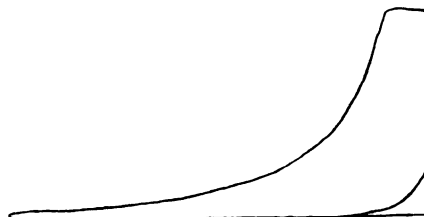


FIG. 2.

ing more load. The point of cut-off is now longer, making the terminal pressure higher, therefore the temperature at this point is higher, consequently when the next charge of steam comes in, less of it is condensed from this cause. The area of diagram is now larger, showing that more power is developed.

Calculating the theoretical water consumption from the terminal pressures, shows that more is required for Fig. 2 than for Fig. 1, but we would not be surprised if the amount actually evaporated by the boiler was about the same in both cases. As the power developed in Fig. 2 is greater, the divisor is larger when computing the theoretical rate of water consumption, or, in other words, the pounds of water evaporated per hour for each horse power developed, therefore the rate is lower, showing a more efficient engine.

As these lines are written I remember a case where an engine carried a medium load, which we will assume is fairly represented by Fig. 2. One of the tenants in that building moved away, causing the load on the engine to be reduced, so that it was probably represented by Fig. 1.

The owners mourned the loss of a good tenant, but expected to save coal by the change. They were much surprised, however, to find that their coal bill was fully as high as before. This instance is presented to illustrate the statements previously made.

Fig. 3 illustrates a diagram taken with a much heavier

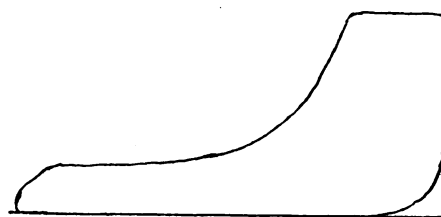


FIG. 3.

load, giving a higher terminal pressure, which reduces the difference between it and the initial pressure. Cylinder condensation due to conditions already described, is much less than before, and although the total water evaporated is more, the power developed is greater, making the rate less. If the load is increased much more, the efficiency will be reduced, because a very high terminal pressure results in

losing more heat than is saved by reduction of cylinder condensation.

Due consideration of the foregoing statements will make the matter of wastefulness of unloaded engines plain to those who have not already mastered the subject, but it does not show the loss caused by loading an engine until its speed is rendered unsteady.

Taking the case of a shop or factory filled with automatic machines for the manufacture of some staple article of commerce. All of these machines are expected to run at a certain speed, and all other details are arranged to correspond. A given output should thus be realized each day, but if the engine is so heavily loaded that the speed is reduced five per cent., while the running expenses remain exactly the same, the final result is a large loss. This loss may equal the entire cost of coal, so that while the substitution of a larger engine means less efficiency when the engine alone is considered, yet it makes a large saving when the whole plant is included.

the valve in exhaust pipe, were closed, and the machinery started by turning steam into the other cylinder.

Of course, the idle crank looked odd as it turned, but better results were secured, as a diagram from the working cylinder resembles Fig. 2, showing that the load is not heavy enough to lower the speed.

He used one cylinder for about three months, then laid that one off and used the other for a similar period. Moisture left in the steam chest and cylinder, caused the bright surface to rust. There were two steam chests on each cylinder, as shown in Fig. 4, in which were gridiron valves. The covers of these were removed until wanted, and all bright parts that are touched by steam when in use, were covered with Dixon's Flake Graphite, mixed with heavy cylinder oil.

This not only prevented rust and corrosion, but when the time arrived to start the idle cylinder, it was not necessary to remove any of the mixture, as it is a good lubricant, therefore it was only necessary to replace the steam chest

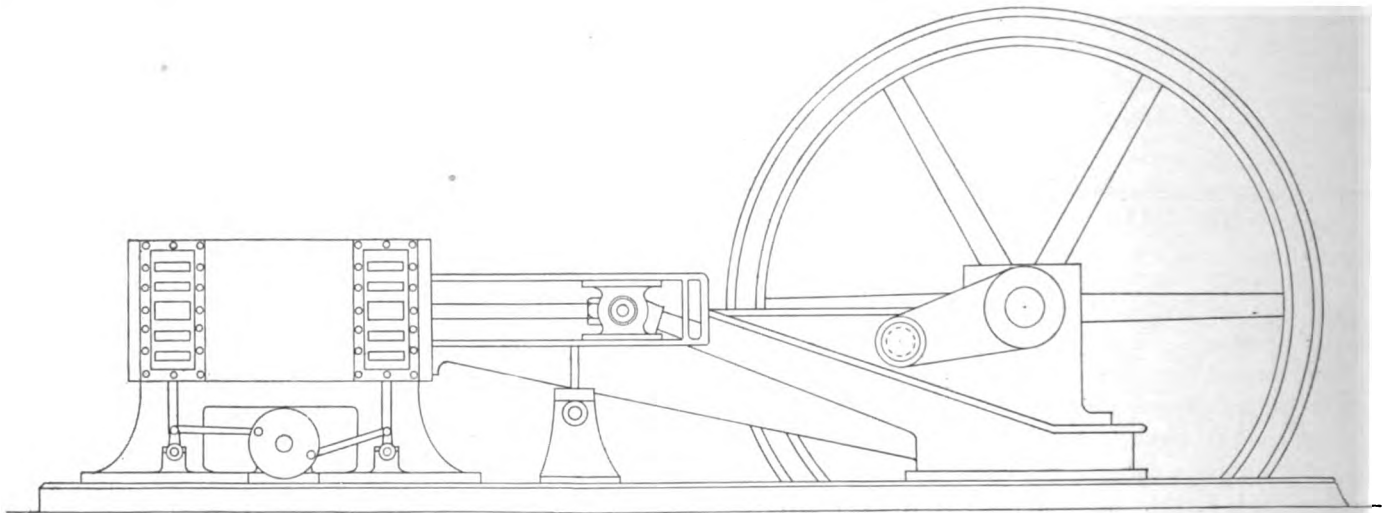


FIG. 4.

In the majority of cases where an engine is overloaded, the engineer can do but little to remedy the evil. He may find it possible to reduce the boiler pressure, (although this is not practical in all cases), but the limit is soon reached. Reducing the speed of engine will raise the terminal pressure and thus prove beneficial, but this makes it necessary to put on a smaller main pulley, or else increase the diameter of fly wheel, neither of which may be practical on account of other changes which would be required.

In a certain case that I remember an engineer had an excellent chance to make an improvement along this line, and he was not slow to take advantage of it. He took charge of a double engine, and found it underloaded. This does not mean a cross compound engine, but one in which both cylinders take steam directly from the boilers, and exhaust it independently into the air, or into a condenser, as the case may be. In this instance it went directly to the air.

Taking diagrams from these cylinders he found them very much like Fig. 1. He proceeded, at the first opportunity, to disconnect the connecting rod on one side of the engine from the crank pin, and let it rest on the frame, as shown in Fig. 4. The throttle valve for this cylinder, also

covers and cylinder head, turn on steam and start up. The use of white lead, or any similar substance, makes it necessary to thoroughly remove it from all surfaces before it is safe to turn on steam, as some of it would be sure to cause trouble. This disagreeable job is eliminated by the use of graphite and cylinder oil, well distributed over the surfaces that are liable to rust.

#### WHY HE DIDN'T WANT MORE CRUCIBLES.

A Dixon salesman called on a well-known western manufacturer, in the hope of securing a crucible order, as no crucibles had been ordered by the firm for some time.

He was told that no crucibles were needed, but the statement was accompanied by a smile, and the manufacturer added: "The fact is, I cannot give you an order this time, because the Dixon crucibles are now giving such good service that we do not have to buy so often, although we make just as much brass as ever."

The Dixon Company are determined to keep the Dixon crucibles as they have been for the past seventy years, "the standard the world over," and no pains or expense are spared anywhere along the line of crucible manufacture.



### YOUR FRIEND THE DRUMMER.

The man who drums for your trade is as much a part of mercantile life as the goods he sells. You may be tried and harassed by a few of the tribe, but the rank and file are nearer to being your friends than you many times think. We make a plea here for the drummer, and for your best treatment of him.

In the first place, treat him well and try not to waste his time. His days are all busy and he has no hours to waste. You need him as much as he needs you, and his friendship is worth as much to you as yours is to him.

He frequently sleeps in bad beds, eats bad food, loses rest, but he comes up smiling and pleasant with it all. He wants to show you his line, and he not only hopes but expects to sell you something. He is three days behind schedule, and the house has been hurrying him up, but he doesn't tell you of it, nor does he ask you to fall over yourself in getting ready to look through the samples. He is steeped in patience and battered by rebukes; he is never certain and never feels safe; he hopes, but he never knows; yet, when he enters your presence there is not a sign of ruffle in his manner and no trace of impatience or fear. He puts confidence into your soul by the way he fairly breathes confidence concerning the goods he wants to show. He can inspire you and your clerks, even though you feel compelled to pass him along. You are glad to see him whether you want to admit it or not.

No obligations hold you toward buying from him, but the plain obligation of one man toward another should induce you to treat him with every consideration that can assist him. Out of plain gentlemanliness, do not hold him all day and send him away without looking through his trunks or buying a cent's worth, when you know in the morning that you cannot place an order. Tell him frankly the situation if you cannot immediately accommodate him, and let him stay on his own responsibility if he waits for you.

Put yourself in the drummer's place and do the best you can and by him. Apply the golden rule. He is sensible and reciprocative. If he happens to be otherwise you may rest assured he will not trouble you many times, for his career will be short.—*The Glovers' Review*.

### DIXON'S GRAPHITE BRUSHES.

For Motors and Generators.

Although Dixon's Graphite Motor and Generator Brushes are rapidly making their way through the little advertising that we are giving them and through the intrinsic value that they possess, yet it is very pleasing to us to have reports such as the following.

Accompanying an order, the chief engineer of a very prominent plant writes:

"We are sending you herewith an order for sixty-two brushes. Your representative left a set of Dixon's Graphite Brushes for trial, and they are the best we have ever had. We use a great many, as we have eighty motors in the building, and will give you a larger order later."

Since the above was written we have received an order for 500 brushes.

A gentleman whose business it is to go through electric plants writes us as follows:

"I find, in going through electric plants, a great many motors that are sparking and cutting, and which are a continual source of annoyance. By asking the man in charge what the cause of all this trouble is, he says he has tried all sorts of compounds, all sorts of remedies, etc., and finally says there must be something the matter with the machine which he is unable to discover.

"In a later trip through the same plants, I have found things running quite differently, and on inquiry of the same engineers, I am told that there really was nothing the matter with the machines, that the fault was with the brushes, and that when Dixon's self-lubricating Graphite Brushes were put on, all the trouble ceased, and that in a few days there was a fine gloss on the commutators and no further need of continually looking after the machines. The Dixon Company should be congratulated in having produced a brush of this kind. It certainly has no equal in the market."

### BISHOP WATTERSON AND THE DRUMMER.

Bishop Watterson tells a story of how he was once taken for a "drummer" by a traveling salesman who was riding on the same train. Indeed, the stranger was so confident that he was addressing another of the guild that he began the conversation by inquiring:

"Do you represent a big house?"

"Biggest on earth," replied the bishop, who was "on" in a twinkling.

"What's the name?" was the next question.

"Lord & Church," replied the bishop.

"H'm!" mused the drummer; "never heard of it. Any branch houses?"

"Branch houses all over the world," said the man of God, easily.

"That's queer!" went on the drummer, who began to think he had run across a boastful representative of some small concern. "Er—boots and shoes?"

"No," said the bishop.

"Hats and caps?"

"No."

"Dry goods?" asked the drummer, beginning to display irritation.

"Well," said the bishop, "some folks call 'em notions."

—*American Tit-Bits*.

Volga, N. C., Oct. 5, 1903.

Sample 'Eterno' copying pencil received and I am very much pleased with it.

It is a first-class copying pencil in every respect and I will send you an order for a supply in a few days.

Thanking you for the sample, I am,

S. M. Riddle, Postmaster.

Mansfield, Ohio, Oct. 12, 1903.

We thank you for the sample 'Eterno' No. 2050, which we consider a very excellent pencil for copying and general purposes.

The Lumbermen's Mutual Insurance Co.

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### ALL ABOUT PUZZLES.

Sam Loyd, the famous puzzleist, says parents should encourage a love for puzzles and tricks. They pertain to a species of mental gymnastics which does much toward clearing fog and cobwebs from the brain, so that one can see and think properly. There is no other school which so sharpens the wits and teaches ingenuity. It is a well-known fact that such scientists as Tyndall, Huxley, Humboldt, Darwin, Bacon, Euler, Herschell, Proctor and scores of others were pronounced puzzleists in their early days, and upon the axiom that the bend of the twig imparts the incline to the tree, it is safe to assume that their early training gave the bent to their minds which in after years inclined them to problems of greater magnitude.

It is astonishing to find how untrained the average mind is to grapple with anything outside of the routine of every day affairs. Note the worried expression on your friend's face if you ask him to define the relationship of the man who, apostrophizing a portrait, exclaimed: "Brothers and sisters I have none, yet that man's father was my father's son." Or the equally bewildering assertion of the young society lady: "That gentleman's mother is my mother's mother-in-law."

Mr. Loyd has noticed that successful men are correct and apt at mental arithmetic, whereas the average mortal is sadly bewildered by propositions which require a little thought to aid the pencil and paper.

How many would be baffled simply by the unusual wording of the proposition: If 10 hen-pens cost tenpence and 10 hens and 1 hen-pen cost tenpence, what will 10 hens without any hen-pens cost? Or, the more familiar story of the seven cats, which would kill seven rats in seven minutes, and the required answer as to how many cats it would require to kill a hundred rats in fifty minutes.

Mr. Loyd says he has found that many profound mechanical principles, as well as those of higher mathematics, can be taught in a never-to-be-forgotten way through the medium of puzzles. The average boy who abhors square root or algebra finds delight in working out puzzles which involve similar principles, and could be led into taking an interest in mathematics through such mediums.

"If you should ask me to explain the fascination of puzzles and tricks," says Mr. Loyd, "I would say that it is just as natural for a person to wish to measure his wit against another's as it is to test their relative strength or agility."

"John says he can do that puzzle, and I guess I will not be beaten by him. Let us see who will do it first."

"There is the whole spirit of the thing in a nutshell. It is a contest of brains."

"Young people take delight in puzzles which employ pennies, buttons, scissors, strings, matches, pencils, or such things as pertain to the household, and any one with good repertoire wins their hearts. In fact, one clever trick, as a stock in trade, with the happy faculty of showing it off to good advantage, is quite an accomplishment, and will make a fellow popular and pass as a genius for a whole lifetime."

Dixon's graphite publications sent free upon request.

### AN APPEAL FROM THE WEST.

We have an envelope bearing the stamp of Portland, Oregon, August 19th, 1:30 P. M., 1904, addressed to "Joseph Dixon Crucible Company, Yersey City, N. Y." It contains simply a piece of white paper on which is written in very black ink: "Don't forget your poor soul." Now, here is someone who has the idea that corporations have souls, and they do not want us to forget that we have one. Thank you, unknown friend, we will not forget it.

### DIXON'S HANDY GRAPHITE ROPE DRESSING.

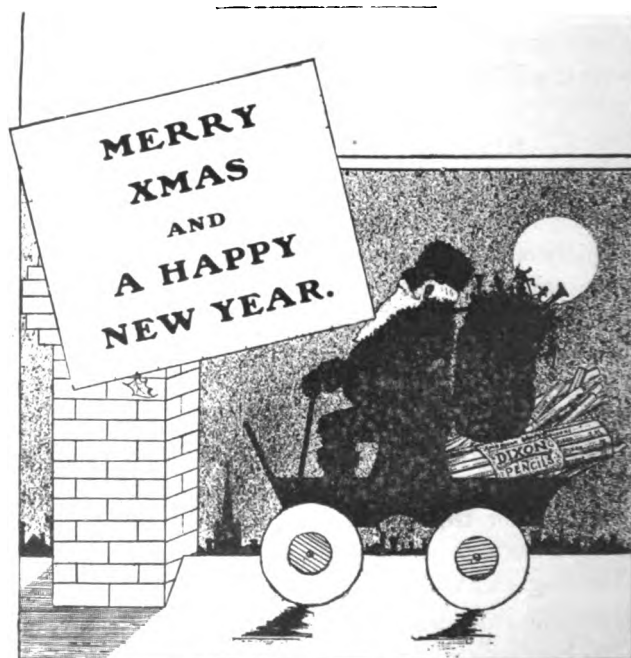
Mr. H. A. Greene, chief engineer of the Hotel Brunswick, Back Bay, Boston, Mass., writes us as follows:

"I find the boys here are using your graphite for many different purposes. I myself have just put it to another good use; that is, in the form of your graphite grease for elevator cables, put up in a package in the shape of a book. This is the best and handiest thing I have gotten hold of yet, and any engineer who has once used graphite grease in this form would never lubricate a cable in any other way or with any other material. I believe the man who got up that idea must have had some experience himself in greasing a cable."

### GRAPHITE AS A LUBRICANT.

Under the title of "Graphite as a Lubricant," the Joseph Dixon Crucible Company is distributing a revised edition of their pamphlet concerning the use of graphite as a protection against abrasion of rubbing surfaces. The pamphlet is well worthy of consideration, as it contains much information of value based on actual service conditions, which is gathered from M. C. B. tests, railroad club proceedings, etc. The first chapter discusses friction and lubrication.

Continuing, the remainder of the paper is more closely identified with the use of graphite, either alone or mixed with oil, and the many forms and types of machinery on which it is used to advantage.—*Railway Master Mechanic.*

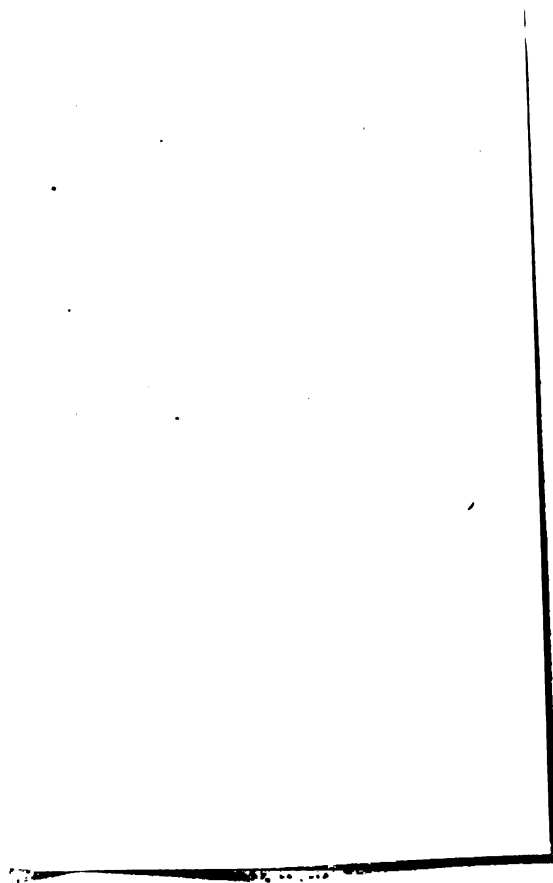












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